

1869.

1870.

ILLUSTRATED

Descriptive Catalogue

OF

GRAPE VINES,

SMALL FRUIT.

AND

SEED POTATOES,

CULTIVATED AND FOR SALE AT THE

BUSHBERG VINEYARDS & ORCHARDS,

JEFFERSON CO., MO.

WITH

Brief Directions for Planting and Cultivating.

ISIDOR BUSH & SON,

PROPRIETORS.

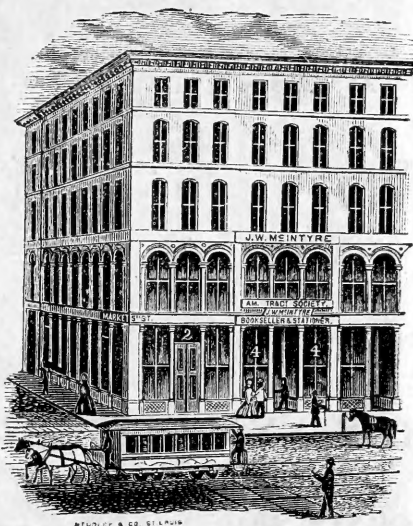
SAINT LOUIS:

R. P. STUDLEY & CO., PRINTERS AND MANUFACTURING STATIONERS,

1869.

J. W. McINTYRE,
Publisher, Bookseller,
STATIONER,
FIFTH STREET, CORNER OF MARKET,
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Nor *Entered*, according to Act of Congress, etc.

We have copied from the works of Husmann, Muench, Fuller, from the *Grape Culturist*, and other sources We have given them due credit in the proper places, and have also given our own views freely. All are welcome to copy from us, and all we claim in fairness is, that those who do so give this little work due credit.

SB389
.B97

H. D. F. Oct. 27, 11.

TO OUR CUSTOMERS.

Our success in grape growing, and in the propagating business of grape vines, has been highly satisfactory, in fact, far beyond our expectations, the demand for our plants exceeding our stock. In view of the very great competition even of large well known and long established nurseries, this success is highly flattering, and has encouraged us to increase our efforts so as to produce for next season a large stock, not excelled by any other establishment in the country in quality, and embracing almost every valuable variety. With our increased facilities we are now enabled to offer both a large and better stock, and at *reduced* prices, which, *taking quality in consideration*, will be found as cheap as the same varieties can be obtained from any other responsible party.

We do *not* pretend to furnish "*better and cheaper* vines than can be afforded by any other establishment." We do *not* pretend that "money-making is secondary with us," we leave this to others; all we do claim is, that we *hope to merit* a reasonable share of patronage, the continued confidence of our customers, and a fair profit.

In this connection, we cannot refrain from referring with a certain pride to the voluntary assurances of satisfaction we received, some of which are published herewith. Desiring to return our thanks to our customers in an appropriate and tangible form, and to respond to a desire often expressed by our correspondents, we concluded to present them with a fine *Illustrated and Descriptive Catalogue*, wherein the characteristic and relative merits of our different varieties are clearly stated.

We leave it to others to judge of its merits. We tried to get up something better than a mere price list, something that will be interesting and useful to progressive grape culturists, and have not spared time, labor and money in preparing it. But whatever merit it may have, it is largely due to the information we received from our friend and teacher Mr. George Husmann, from his valuable "*Grape Culturist*" (a new monthly devoted to this subject); to our skillful propagator, Mr. Henry B. Kelley,

and to the description of varieties by G. W. Campbell, A. S. Fuller, F. R. Elliott, and others, which we compared with our own experience here. It has become customary to prefix to a descriptive Catalogue of fruits and flowers some brief directions for their cultivation, and we have been urged to do the same; to some extent it is also true that, as a treatise on grape culture would not be complete without a description of varieties, so is a description of varieties incomplete without some rules about their treatment.

We are aware, however, that some short and very incomplete directions, "a few hints," do more harm than good. They generally only confuse the tyro or misrepresent grape growing as a very easy matter, requiring no larger outlay of capital, nor any more knowledge, skill, and labor than to produce a crop of corn. This we do *not* wish to do. But on the other hand we are also aware that the excellent but somewhat costly books on grape culture, by Fuller, Husmann, and others, are not purchased by every grape grower, and that many of these are somewhat afraid of reading whole books; moreover, considerable progress has been made in grape culture since these books were written: their very authors, indefatigable horticulturists as they are, have by study and experience, modified their views on some points, but have not had time or encouragement enough from their publishers to re-write their works for new editions. These facts are so palpable, that lately some very indifferent, cheap little pamphlets (such as the Grape Growers' Guide, by J. Keech), have been published and found ready sale, and thus we came to the conclusion that a short manual containing plain but full directions in regard to the planting, culture, and training of Grape Vines, and offered *free* to our customers, and to all who apply for less than its cost, will be welcome. Although we have not simply copied from other works, we do not claim originality, but hope that at least some of those interested in grape culture may derive pleasure and profit from reading it.

TESTIMONIALS.

EXTRACTS FROM LETTERS OF OUR CUSTOMERS.

ST. CHARLES, Mo., Nov. 9th, 1868.

MESSRS. BUSH & SON:

Gentlemen:—Hundred Rogers No. 1 came duly to hand; also your favor of 5th inst. *The vines are fine.*

C. T. MALLINCKRODT.

ARLINGTON, Mo., March, 1869.

ISIDOR BUSH & SON:

THE vines I got of you last fall were the best I ever saw sent out from a nursery—stout, healthy looking, and excellently well rooted. As long as you treat me so well I shall not experiment with other dealers.

Very respectfully, &c.,

C. W. GILL.
Per J. H. GILL.

COLLINSVILLE, ILLS., Nov. 14th, 1869.

ISIDOR BUSH, ESQ.:

Dear Sir:—The 180 Hartford grape roots came to hand a few days since, and were finer than any grape plants I have received from any one whom I have yet got grape roots of. In a word, they were fine.

GEO. A. MILLER.

CENTRAL POSTOFFICE, St. Louis Co., Mo., July 30, '69.
MESSRS. ISIDOR BUSH & SON:

The plants purchased of your firm this spring, comprising ten different varieties to the number of 3,000, have given very good satisfaction. They have all proved to be vigorous growers and give promise of complete success for the future.

CHAS. BRACHES.

"SPRINGFIELD NURSERY," SPRINGFIELD, Mo., April 10, '69.

MESSRS. ISIDOR BUSH & SON:

Gentlemen:—I have just finished planting the 4,000 grape vines you sold me last November. They were shipped so late I had some fear of frost, but they were so well packed that they arrived in the very best condition, giving satisfaction in *quality* also, for the whole lot are healthy, well rooted vines. Should you always send out *such* stock, your business will advertise itself and prosper.

Very respectfully,

D. S. HOLMAN.

MT. VERNON, Mo., June 15, 1869.

ISIDOR BUSH & SON:

Please let me have your new price list and descriptive catalogue at your earliest convenience. I will want to get some stock *in the fall*; it is the best time for shipping. Hereafter I would rather risk them shipped the last of February than in the growing season. Transportation is so very uncertain from the terminus of the railroad that it would be better to risk a freeze than the delays in the advanced season. It was from two to four weeks later than I ever set vines; nevertheless, most of the grapes are doing fine. I lost but a few; Ives all grew; Norton's done well.

Yours, &c.,

THOS. STEPHENS.

WESTON, Mo., April 30, 1869.

ISIDOR BUSH & SON:

Dear Sirs:—The shipment of vines came to hand about the 5th of the month, and have been all planted. They were delayed over ten days on the railroad, and I feared some of them might have been injured, but I am gratified to inform you they have nearly all lived and look well. The very low prices at which you sell such thrifty vines ought to recommend you to the grape growers of the State. I have yearly given away numbers of my own vines, to arouse an interest with our people to the grape as one of the future sources of Missouri's wealth. Respectfully and truly yours,

JNO. DONIPHAN.

CENTRAL, ST. LOUIS CO., Mo., July 27, 1869.

MESSRS. ISIDOR BUSH & SON:

It gives me pleasure to inform you that all the vines purchased of you have (with but very few exceptions) made an excellent growth. Most of the *new* varieties, though grown from single eyes and only one year old, had enough of fully ripened *wood*, thin, but of sufficient length to plant deep, and all their *roots* were magnificent. These plants had to withstand on our grounds a terrible hailstorm, just at the time when the buds were opening, but they were of such health and vigor that they made new shoots, and are now from two to three feet in length. Even of the Hermann, of which you had given us your last six plants, representing them yourself as of inferior quality, *one* only failed, and this one through a carelessness. I was aware that these "Hermann" were grown from budded roots and had apparently made but a few inches growth last season; but as none others of this rare and new variety could be obtained, they received special care, and are now growing finely. From this it will be seen that grape vines grow from single eyes under glass, and then properly hardened, are in no way inferior to those grown in the open air.

I remember that this method was practiced forty years ago by my father, then manager of a large nursery in Prussia; and my own experience has taught me even that plants, grown in propagating houses at the proper season, from well developed green cuttings, made vigorous live plants, in no wise inferior to those grown in any other manner, provided always that they had perfect roots. Certain plants can not be propagated except from green cuttings, and have been so grown for more than half a decade; in fact, with some species of the Coniferae and Myrtaceae family no other method of propagation is practicable. I fear that I have detained you too long with my remarks and close, wishing that all your customers may attain equally favorable results. Yours, respectfully,

ED. V. KRAUSNICK.

REFERENCES.—We may also refer to the following well known horticulturists:

Hon. Geo. Husmann, Bluffton, Mo.; Hon. Fred. Mülench, Femme Osage, Mo.; Mr. Sam. Miller, Bluffton, Mo.; Messrs. C. W. Spalding, Chas. Peabody, L. D. Morse, Henry Michel, St. Louis, Mo.; Mr. John E. Mottier, Northeast Pa.; Mr. W. H. Lewis, Sandusky, O.; Messrs. Silas Boardman & Co., Rochester, N. Y., and to the trade generally.

CLIMATE, SOIL, AND ASPECT

OF

AMERICAN GRAPE VINES.

Whether the Grape Vine is a native of Asia, and has followed the footsteps of man from the shores of the Caspian Sea, and "intertwined its tendrils with civilization and refinement in every age," or whether the hundreds of varieties that now exist spring from different primordial forms or species, certain it is that, although the Grape Vine may be found in Europe from the Tropic of Cancer to the Baltic Sea, and in America from the Gulf to the Lakes, the Vine is nevertheless peculiarly the growth of definite climatic conditions; so much so that even in its most adapted climate there are often seasons if not of failure, at least of an imperfect development of its fruit. From long and careful observations of temperature and moisture in years of success and of failure, we have finally arrived at some definite conclusions respecting the meteorological influences affecting the grape.*

1st. No matter how excellent the soil, if there is a less average than fifty-five degrees of temperature for the *growing* months of April, May, and June, and a less average than sixty-five degrees for the *maturing* months of July, August, and September, there can be no hope of success; and where the temperature averages sixty-five degrees for the former months, and seventy-five degrees for the latter, other conditions being equal, fruit of the greatest excellence can be raised, and wine of the greatest body and finest quality can be produced.

2d. When there is an average rain fall of six inches for the months of April, May, and June, and an average of five inches for the months of July, August, and September, other conditions favorable, we cannot succeed in raising grapes. When the average rain fall for the first months is not more than four inches, and the average for the latter is not more than three inches, other conditions favorable, the *hardy* varieties can be cultivated with success. But where there is less average rain fall than five inches for April, May, and June, and a less average

than two inches in July, August, and September, all other conditions being favorable, fruit of the best quality can be raised, and wine of the greatest body and excellence can be made. The humidity of the atmosphere in some countries, the dryness of the air in others, will, of course, materially change the proportion of rainfall required for or injurious to the grape. Here, a clear sky and dry atmosphere high temperature and very little rainfall for the latter three months, and a less change of temperature than 50 degrees in twenty-four hours, any time of the year, are the most favorable conditions for success.*

There are only a few countries where the grape will, in favorable seasons, grow to perfection. Species found in the lower latitudes will not flourish if removed further north; the natives of higher latitudes will not endure the southern heat; the Scuppernong cannot ripen north of Virginia; the fox grape of the North will scarcely grow in the lower regions of Carolina or Georgia; a vine which produces delicious grapes in Missouri may become very inferior in the most favored localities of New Hampshire.

Thus the climate, the mean temperature as well as the extremes, the length of the growing season, the relative amount of rain, the ameliorating influence of lakes and large rivers, the altitude as well as the soil, have an almost incredible influence on various varieties of grapes; and a judicious choice of locations adapted to the grape, and of varieties adapted to our location, its climate and soil, is therefore of the first importance.

The constitution of the European varieties (*Vitis vinifera*) is not fitted to withstand our sudden changes of temperature, and from extreme humidity

*Dr. J. Stayman: The meteorological influence affecting the grape.

*The correctness of these conclusions has been but too well confirmed this season (1869). With us, at Bushberg, the quantity of rain that fell in June amounted to over eight inches, and was followed by severe rot. In proportion as the abundant rainfalls extended and continued, the grape crop of this season must necessarily prove a failure. We may here as well observe that the strength of the must by Oechsle's scale stated in our description of varieties, is partly from tests in 1867, a *very* favorable season in the West, the grape having been remarkably rich.

to extreme dryness; disease, and the death of the plants after a few years, are the inevitable result, and all attempts to acclimate this species of grape east of the Rocky Mountains have proved failures.* We must look, then, to species which we find indigenous *here* (and their descendants) for success in grape culture, and in fact to only three of them,† viz:

1. *VITIS LABRUSCA*, northern fox grape;
2. *VITIS ÆSTIVALIS*, summer grape, chicken grape;

3. *VITIS CORDIFOLIA*, winter grape, frost grape.

The *V. Labrusca* has very wooly young leaves and branchlets, the leaves continuing rusty-wooly beneath; fertile panicles compact; berries large (it is the parent of *all* our varieties producing large berries), with a tough, musky pulp. From it originated the Adirondac, Anna, Cassady, Catawba, Concord, Diana, Hartford Prolific, Iona, Isabella, Israella, Ives, Lydia, Martha, Mary-Ann, Miles, Mottled, Northern Muscadine, North Carolina, Perkins, Rebecca, Rentz, Telegraph, Union Village and Venango (Miner's Seedling). The varieties of this class *generally* require a deep, rich soil; they prefer *here* our eastern, northeastern, or even northern slopes. Farther south, Mr. Worth, of Richmond, Va., has observed that the wild grapes of the *Labrusca* family are always found in bottom lands, ripening their fruit in protecting and generally heavy shade; and we believe, with him, that it is a mistake to prefer for *these* varieties a gravelly, sometimes arid, soil, with a directly southern exposure,‡ and that by displaying their fruit to the direct rays of a vertical sun we promote mildew and rot, to which the *V. Labrusca*, and especially its improved and cultivated descendants, are more or less inclined. They are not adapted to our extreme northern latitudes, where the mean temperature for June, July, August and September falls below 67° Fahrenheit; and, although some of them will endure the extreme rigors of the winters in some districts of New England and northern New York, Iowa and Wisconsin, as high as the isotherm§ of 60° without protection, they do not and cannot attain there a high degree of perfection; and even the hardy Concord improves very much and finds a more congenial climate in lower latitudes and warmer zones.

The *V. Æstivalis*, or summer grape (a very inappropriate name, as the fruit of its varieties ripens

in October) has downy young leaves, with loose cobwebby hair beneath, smoothish when old, green above; fertile panicles compound, long and slender; berries small, black, with a bloom, pleasant. From it originated our best and most promising wine grapes: the Alvey, Cynthiana, Cunningham, Devereux, Elsinburgh, Herbemont, Lenoir, Louisiana (?), Norton's Virginia and Rulander (?) The varieties of the *Æstivalis* generally prefer a dry, poor soil, intermingled with lime and decomposed stones, with a southern and southwestern exposure; they seem to endure the severest drought without flagging. Although we have seen some of them, especially the Alvey and the Norton, bear immense crops on the deep, rich, sandy loam of our river bottoms, their fruit does not reach the same perfection. Their proper climate is south of the isotherm of 70° Fahrenheit for the four months named; they require a longer season to attain maturity. The more tender varieties may be properly placed between the isothermal lines of 70° and 75°. The Delaware, by some considered an *Æstivalis*, shows its *partly northern* descent also in its opposite requirements of soil and location. (See its description.)

The *V. Cordifolia* has thin smooth leaves, green both sides, not shining, heart shaped, acuminate, sharply and coarsely toothed (often obscurely 3-lobed); panicles compound, large, and loose; flowers very sweet-scented; berries small, very acerb, ripening after frost, and therefore called the winter grape; grows in all our eastern States, and its range extends west to the Rocky Mountains, north to Lake Winnipeg, and south to Texas. It is the only indigenous grape in Wisconsin and Minnesota. From this species originated the Clinton, the Taylor's Bullit and their descendants. They are the very hardiest varieties, succeed even in localities where all others fail, and should be planted on rather poor soil. They are more particularly valuable for wine. But besides the varieties of these three species we have many grapes, which originated by fertilizing one species, or one of its varieties, with the pollen of another species or one of its varieties; these are called Hybrids. In them we endeavor to combine the excellencies of both parents, and may expect to get a grape as hardy as the Clinton or Concord, and as sweet and juicy as the Chasselas. The most valuable Hybrids we now have are some of *Roger's* Hybrids, which are crosses between our native *labrusca* and the *V. vinifera*; and *Arnold's* Hybrids, obtained by crosses between the *Cordifolia* and the *V. vinifera*; but the greatest results await us probably by hybridization of our native species with each other, which field has as yet scarcely been trod upon. In the Delaware grape, an accidental hybrid between the *Vitis labrusca* and *V. æstivalis* (Wm. Saunders, Proc. Am. Pom. Society, XI Session, 1867,) we have an example of what may be expected from this combination, and we believe that the Creveling and Maxatawney have a similar

* Excepting perhaps some varieties of the Burgundy grape, if the Rulander and Louisiana belong to this family.

† The 4th (*V. Vulpina; rotundifolia*), the southern fox grape or Souppernong class, growing only south of Virginia, Kentucky and Missouri; the 5th (*Caribæa*), growing only in the thickest southern swamps.

‡ In cold climates, however, as for instance in Massachusetts, a southern slope, with good shelter and protection on the north, northeast, and especially northwest, are absolutely necessary to ripen even the Concord.

§ Isothermal lines denote localities of equal mean temperature, and have been delineated upon maps from careful observation, indicating the various belts of climate, the limits where certain important plants thrive, by far more accurately than by zones and geographical degrees, which have long been in vogue, but which have really no place in nature.

origin;* these, as well as the Delaware, possess certain characteristics of each of the *two* native species, and a fruit superior to both. The requirements of hybrid grapes, as to climate, soil, and aspect, will be found similar to the requirements of one or the other of their parents.

The only *general* rules we can give, therefore, to guide us in the selection of a proper location for vineyards, are:

1. A good wine-growing region is one where the season of growth is of sufficient length to ripen to perfection our best wine grapes, exempt from late spring frosts, heavy summer dews, and early frosts in autumn. Do not attempt therefore to cultivate the grape in low, damp valleys, along creeks; low situations, where water can settle and stagnate about the roots will not answer; wherever we find the ague an habitual guest with the inhabitants, we need not look for healthy grape vines; but on the hillsides, gentle slopes, along large rivers and lakes, on the bluffs overhanging the banks of our large streams, where the fogs arising from the water give sufficient humidity to the atmosphere, even in the hottest summer days, to refresh the leaf during the night and morning hours, there is the location for the grape.

2. A good soil for the vineyard should be a dry, calcareous loam, sufficiently deep (say three feet), loose and friable, draining itself readily. New soils, both granitic and limestone, made up by nature of decomposed stone and leaf mould, are to be preferred to those that have long been in cultivation. If you have such a location and soil, seek no further, ask no chemist to analyze its ingredients, but go at once to

PREPARING THE SOIL.

The old system of *trenching* is no more practiced, except upon very hard, stony soil, and upon steep hillsides, being too costly and of very little, if any, advantage. The plow has taken the place of the spade and has much lessened the expense. While we would urge a thorough work in the preparation of the soil before planting the vine, and warn against planting in ditches, or worse yet, in square holes, we believe that by careful grubbing (in timbered lands), leaving no stumps, which would only be a continual eyesore and hindrance to proper cultivation, and then using a large breaking plow, followed by the subsoil plow, the soil will be stirred as deep (say twenty inches) as is really necessary to insure a good and healthy growth of vines. This will require two to three yoke of oxen to each plow, according to the condition of the soil. For old ground a common two horse plow, with a span of strong horses or cattle, followed in the same furrow by a subsoil stirrer, will be sufficient to stir the

soil deeply and thoroughly, and will leave it as mellow, and in its natural position, as desirable. This may be done during any time of the year when the ground is open and not too wet. Most soils would be much benefited by underdraining; the manner of doing it is the same as for other farm crops, except that for vines, the drains should be placed deeper; it is less important on our hill sides, and too costly to be practiced to a great extent here; wet spots, however, must be drained at least by gutters, and to prevent the ground from washing, small ditches should be made, every eighth or tenth row, parallel with the hill side, and leading into a main ditch at the end or the middle of the vineyard. Steep hillsides, if used at all, should be terraced.

PLANTING.

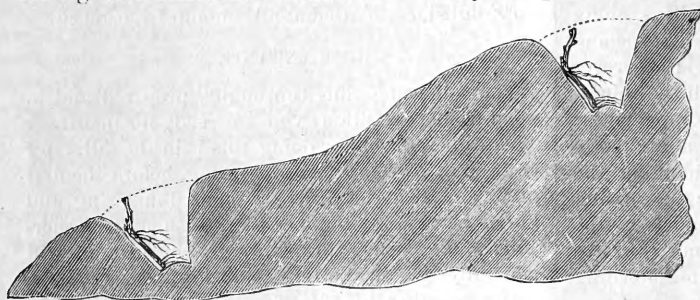
The soil being thus thoroughly prepared and in good friable condition, you are ready for planting. The proper season for doing this is in the fall, after the first of November; or in spring, before the first of May. Most vineyards are planted in spring, and in northern, very cold localities, this may be preferable. We prefer fall planting; the ground will generally be in better condition, as we have better weather in the fall, and more time to spare. The ground can settle among the roots in winter; the roots will have healed and calloused over, new rootlets will issue early in spring before the condition of the ground would have permitted planting, and the young plants commencing to grow as soon as the frost is out of the ground, will start with full vigor in spring. To prevent the roots from being thrown to the surface by alternate freezing and thawing, a mound of earth hoed up around the plants, or a ridge thrown up with a plow, so as to elevate the ground somewhat in the rows, will be found to afford all the protection necessary. By no means delay planting till *late* in spring (after May first *here*), and if your ground is not ready in time, you had much better cultivate it with corn or hoed crops of some kind, and postpone planting until next fall. Planting in rows, six feet apart, is now the usual method; it gives sufficient space for a horse and man to pass through with plow or cultivator; the distance in the rows varies somewhat with the growth of the different varieties and the richness of the soil. Most of our vigorous, strong growers, the Concord, Ives, Hartford, Clinton, Taylor, Norton, Herbemont, will need eight to ten feet in the rows, while the Delaware, Catawba, Creveling, Iona, may have sufficient room when planted six feet apart. The dwarfing treatment practiced with European varieties, especially by German vinters, will not do for American vines, which must have ample room to spread and a free circulation of air. The number of vines required to set an acre, containing 43,560 square feet, will be:

DISTANCE.	NUMBER.
5 ft. by 5 ft.....	1,742
5 ft. by 6 ft.....	1,452

* We are aware that this classification is not agreed to by many Horticulturists. We believe it to be correct, or at least nearest to the truth, but do not give it as undisputable.

DISTANCE.	NUMBER.
6 ft. by 6 ft.....	1,210
6 ft. by 7 ft.....	1,037
6 ft. by 8 ft.....	907
6 ft. by 9 ft.....	807
6 ft. by 10 ft.....	725
7 ft. by 7 ft.....	889
7 ft. by 8 ft.....	777
7 ft. by 9 ft.....	690
7 ft. by 10 ft.....	622
8 ft. by 8 ft.....	680
8 ft. by 9 ft.....	605
8 ft. by 10 ft.....	544
9 ft. by 9 ft.....	537
9 ft. by 10 ft.....	484
10 ft. by 10 ft.....	435

Having determined the distance at which you



(Fig. 1.)

desire to plant the vines, mark off the rows, running them parallel, and with the most level lines of your slope or hillside, so that you may easily plow between the rows and that the ground may not wash. (On an eastern slope the rows will therefore run in a direction from north to south, which most vine-dressers prefer.) Be careful, on sloping ground, to leave spaces for surface drains, the steeper the hillsides the more frequent must these surface drains be. Then divide the rows into the desired distances, by the aid of a stretched line, and put small stakes where each plant is to stand. Now, if the ground is sufficiently dry so as to pulverize well, make the holes to receive the vines, as shown in fig. 1. The depth of these holes must necessarily vary somewhat with the nature of the soil. On very steep hillsides, and especially on southern slopes, with naturally warm, dry soil, you must plant deeper than on gentle slopes with deep rich soil, or on bottom land and rich prairies. Eight inches will be deep enough on the latter; on the former we should plant from twelve to fourteen inches deep.

Having made the holes, and it is best not to make too many at a time, as the ground will dry out too quickly, you can go to planting.

We do not intend to discuss here whether you should plant cuttings or rooted plants, and whether plants grown from cuttings, from single eyes or layers, are preferable. Propagators and nurserymen are not considered disinterested, impartial judges on this question. But we may reasonably suppose that those who read this catalogue are either our

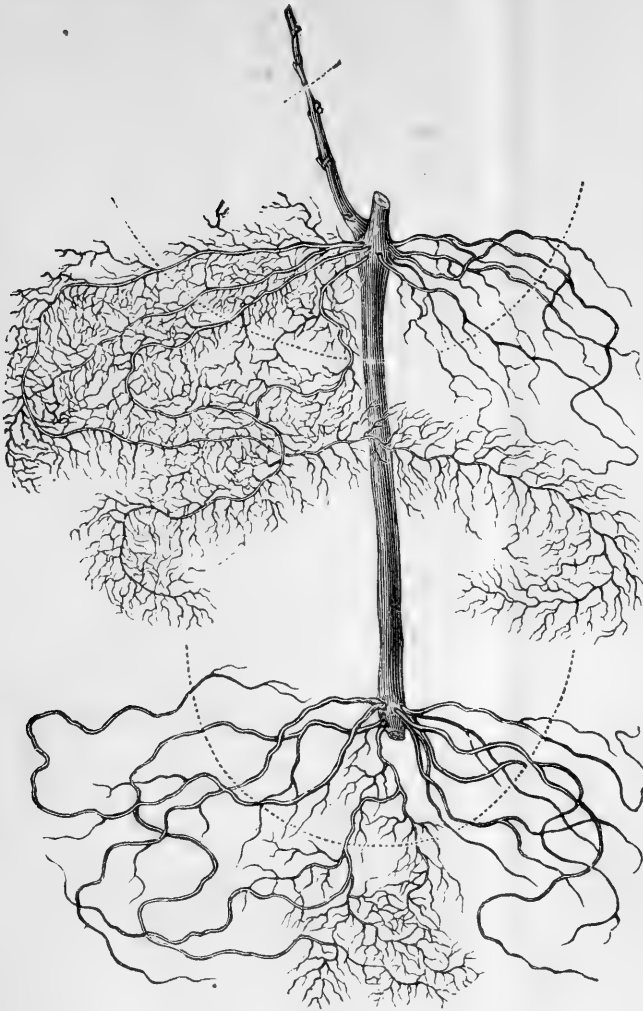
customers or desirous to purchase rooted vines from us, and therefore not inclined to plant cuttings, but on the contrary want to get *the best plants*. Vines raised from layers were in former years held to be superior, and are still preferred by many, but unprejudiced and observing cultivators have found that they only *look* stronger and finer, but are *not as good* as plants properly grown from cuttings or single eyes. Our German and French vine-dressers generally practiced growing vines from *long* cuttings, but short (two-eye) cuttings will undoubtedly make stronger and better ripened roots. Others again have obtained the best results from single eye plants, and consequently prefer them. We have

tried all, and find that it makes very little difference how the vine has been raised, provided it has strong, firm, healthy, well ripened roots (we never found any from long cuttings that had them). As a general rule, a *well grown vine* is in its best condition for planting when *one year old*. Fuller and some other good authorities prefer two-year old, transplanted vines; vines older than two years should

not be planted, and so-called extra large layers "for immediate bearing" are a humbug.

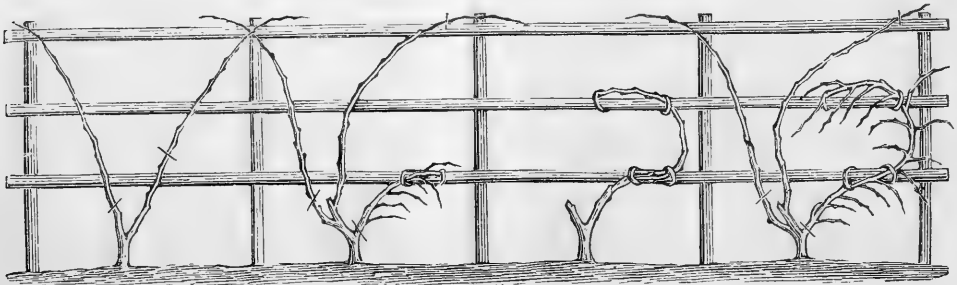
But now let us return to the *modus operandi*. Take your vines, from the place where they were heeled-in,* wrapped in a wet cloth, or in a pañ with water, to the holes; when planting, let one person shorten the *roots*, with a sharp knife, as shown by the dotted line in figure No. 2, then spread them out evenly to all sides, and let another fill in with well pulverized earth. The earth should be worked in among the roots with the fingers, and lightly pressed to them with the foot. Lay the vine in slanting, and let its top come out at the stake previously set. Then, with your knife, cut back the top to a bud just above, or even with the surface of the ground. Do not leave more than two buds on any one of the young vines which you are planting, however strong the tops, or however stout and wiry the roots may be. *One* cane is sufficient to grow, and merely to be prepared for possible accident, both buds are allowed to start. The

* On receiving your vines from the nursery, they should be taken out of the box, without delay, and *heeled-in*, which is done as follows: In a dry and well protected situation, a trench is made in the soil 12 to 15 inches deep, and wide enough to receive the roots of the plants, and of any required length, the soil being thrown out upon one side. The plants are then set thickly together in the trench, with the tops in a sloping direction, and against the bank of soil thrown out of the trench; another trench is made parallel to the first, and the soil taken from it is thrown into the first, covering the roots and carefully filling in all of the interstices between them. Press down the soil, and smooth off the surface, so that water shall not lodge thereon. When one trench is finished, set the plants in the next, and proceed as before. When all this is completed, dig a shallow trench around the whole, so as to carry off the water and keep the situation dry.



(Fig. 2.)

TRAINING AND PRUNING THE VINES.



(Fig. 3.)

weaker of the two shoots may afterwards be removed or pinched back.

When planted in the fall, raise a small mound around your vine, so that the water will drain off, and throw a handful of straw or any other mulch on the top of the mound, to protect it; but do not cover the vine with manure, either decomposed or fresh, under any circumstances.

It is a well authenticated fact that, under the action of nitrogenous agents, the grape grows more luxuriant, its leaves are larger, its product increases in quantity. But the products of vineyards so manured have an acknowledged defect—they impart to the wine a flavor which recalls the kind of manure applied. Moreover, nitrogenous substances exclusively used hasten the decay of vineyards and the exhaustion of the soil.

We *never* use manures in our vineyards, except the ashes of the stumps and brush, which we burn on the spot in clearing, and the decomposed leaves of the forest, which we have to turn under in plowing our grounds. Other soils may require manures, and ours may, in later years. But even those authorities who favor manures in *preparing* certain grounds, or long *after* planting, do not allow any decomposing organic matter to come in contact with the *newly* planted vine.

During the first summer, little else can be done than to keep the ground mellow, loose about the plants and free from weeds; stirring the ground, especially in dry weather, is the best stimulant, far better than liquid manure, and *mulching* (spreading over the ground a layer of tan-bark, sawdust,

straw, salt, hay, or the like, to maintain a more uniform state of temperature and moisture for the roots) is far better than watering. Do not tie your young vines up, do not pinch off laterals; by allowing them to lay on the ground, during the *first* season, more vigorous stems will be obtained. A

fair growth is about four feet the first summer. In the fall, after the foliage is all off, cut back to *two or three buds*. Cover the short cane left with a few inches earth before the ground freezes.

During the following winter, the TRELLIS should be built. The plan adopted by most of our experienced grape growers, as possessing some advantages over other plans, especially if grapes are grown in large quantities, is as follows: Posts of some durable timber (red cedar is best) are split 3 inches thick and about 7 feet long, so as to be 5 feet in height after being set; these posts are set in holes 2 feet deep, 16 to 18 feet apart in the rows (so that either 2 vines 8 feet apart, or 3 vines 6 feet apart, are between two stakes), three wires are then stretched horizontally along the posts, being fastened to each post with a staple Ω , which is driven in so firmly that the wire is prevented from slipping through. The two end posts should be larger than the others and braced (Fig. 4), so that the contraction of the wire (in cold weather) will not loosen them. The first wire is placed about 18 inches from the ground and the others 18 inches apart; this brings the upper wire about 4 feet 6 inches from the ground. We use in our vineyard 4 wires, placed about 15 inches apart, which makes the trellis 5 feet high and permits us tying up the vine more thoroughly. The size of wire used is No. 10 annealed iron; but No. 12 wire is strong enough. At the present high prices of wire the cost per acre will be from \$50 to \$80, according to distance of rows and number of wires used. Messrs. O. P. Saylor & Co., wire dealers, St. Louis, furnish us the following table, which may serve in calculating the cost:

Size of Wire.	Cost per lb.	Weight of 100 yds.	No. lbs. per mile.	No. yds. per bd. 63 lbs.	Length of 100 lbs. in yds.	Break with direct strain of lbs.	No. lbs. per acre.	Cost per acre. 3 strands — rows 8 feet apart.
9	8½	18.36	323	342	669	1560	986	\$83 85
10	10	14.97	264	420	747	1280	807	89 70
11	10	11.95	211	529	939	1000	645	64 50
12	10½	9.24	163	700	1244	800	499	52 30
13	11½	7.05	124	893	1519	568	377	43 45
14	11½	5.51	97	1142	2031	456	266	33 00

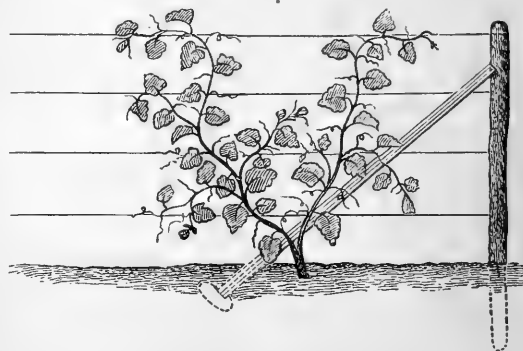
No. 12 is the size most commonly used.

In place of the wire, slats or laths may serve the same purpose (as seen in Fig. 3), but they are not durable, and the posts must then be put much closer. Another mode of making wire trellis (the Fuller plan) is with horizontal bars and perpendicular wires, as shown in a following illustration (Fig. 6). Posts of good, hard, durable wood, 3 inch diameter and 6 feet 6 inches long, are placed between the vines, at equal distance from each vine, and in a line with them, two feet deep in the ground. When the posts are set, nail on strips about 2½ inch wide and 1 inch thick, one strip or bar being placed one foot from the ground, and the other at the top of the post. Then take No. 16 galvanized iron wire and put it on perpendicularly, twisting it

around the lower and upper bar, at a distance of about twelve inches apart. Galvanized iron is preferable, and as a pound of No. 16 wire gives one hundred and two feet, the additional expense is but very small. This trellis will probably cost less than with horizontal wires, and is preferred by some. A good many grape growers train their vines to stakes, believing it to be cheaper, and the prospective decline in the price of grapes and wine will probably induce you to adopt the least costly plan; one, two and three stakes will be recommended by some, all of which will prove a slovenly—very inconvenient method. A work just published* urges even the adoption of the "Souche" or "Buck Pruning" plan used in parts of France and Switzerland, but quite impracticable for our strong growing species, and now abandoned even in those countries for a new system, "the trailing chain culture," of which we shall speak hereafter.

If you have covered your young vines last fall, remove the earth from over them at the approach of spring; then cultivate the whole ground, plowing between the rows from four to six inches deep, and carefully hoeing around the vines with a pronged hoe; the two-prong German hoe or *Karst*, has been generally used in vineyards, but since we got *Hexamer's* prong-hoe we prefer, by far, this excellent tool, and use no other in our vineyards. The ground should be thus broken up, inverted and kept in a mellow condition continually; but do not work the ground when wet!

During the second summer, a cane or shoot is produced from each of the two or three buds which you left on the young vine last fall. Of these young shoots, if there are three, leave only the two strongest, tying them neatly to the trellis, and let them grow unchecked to the uppermost wire.



(Fig. 4.)

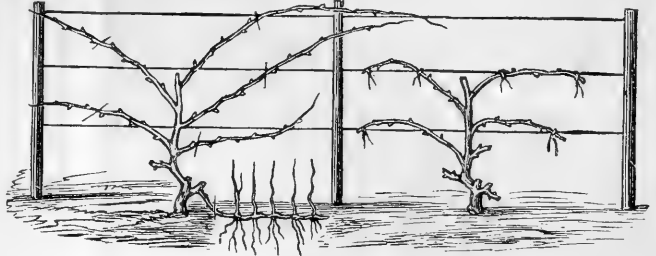
With the strong-growing varieties, especially where we intend to grow the fruit on laterals or spurs, the two main canes are pinched off when they reach the third (or second) wire, whereby the laterals are forced into stronger growth, each forming a medium-sized cane, which is shortened in the

* William J. Flagg: *Three Seasons in European Vineyards*. Harper & Brother, New York, 1869.

fall from four to six buds. One of the two main canes may be layered in June, covering it with mellow soil, about an inch deep, leaving the ends of the laterals out of the ground. These will generally make good plants in the fall for further plantations; with varieties which do not grow easily from cuttings, this method is particularly desirable. Fig. 5 shows the vines tied and pruned, accordingly, at the end of the second season (the cross lines through the canes showing where they are cut off or pruned).

Another good mode of training, recommended by Fuller, is to bend down in fall, at the end of the second season, the two main canes of the vines (the laterals of which have been pinched

being injured by over-bearing, on which account the bunches should be thinned out by taking away all imperfect bunches and feeble shoots. In order to secure future fruitfulness of the vine, and to keep it at the same time in our convenient control, we should allow no more wood to grow than we need



(Fig. 5.)

for next season's bearing, and for this purpose we resort to

SUMMER PRUNING.

The time to perform the first summer pruning is when the young shoots are about six inches long, and when you can see plainly all the small bunches—the embryo fruit. We commence at the lower two spurs, having two buds each, and both started. One of them we intend for a bearing cane next summer; therefore, allow it to grow unchecked for the present, tying it, if long enough, to the lowest wire. The other, which we intend for a spur again next fall, we pinch with the thumb and finger to just beyond the last bunch or button, taking out the leader between the last bunch and the next leaf, as shown in Figure 7, the cross line indicating where the leader is to be pinched off. We now come to the next spur, on the opposite side, where we also leave one cane to grow unchecked, and pinch off the other.



(Fig. 7.)



(Fig. 8.)

back to concentrate the growth into these main canes) in opposite directions, laying and tying them against the lower wire or bar of the trellis, as shown in Figure 6, and shortening them to four feet each. Then let five or six of the buds on the upper side of the arms be grown into upright canes. All buds and shoots not wanted for upright canes, should be rubbed or broken off. This latter method is not well adapted for varieties which require covering in winter; as the former, where the canes are started lower near the ground, and cut loose from the wire, can be easily covered with earth.

At the commencement of the third season (uncover and) tie the canes to the trellis, as shown before. For tying, any soft string or stout woolen yarn, the shreds of old gunnies, may be used; some obtain their tying material from basswood-bark, soaked for two weeks or longer in running water. Mr. Husmann recommends to plant the Golden Willow, and to use its small twigs for tying purposes. Tie tightly, and as young canes grow, keep them tied, but, in all cases, take care against tying too tightly, as the free flow of sap may be obstructed. The ground is now plowed and hoed again, as described before. From each of the buds left at the last pruning (as shown in fig. 3, 5, and 6), canes can be grown during the third year, and each of these canes will probably bear two to three bunches of fruit. There is danger of their

We now go over all the shoots coming from the arms or laterals tied to the trellis, and also pinch them beyond the last bunch. Should any of the buds have pushed out two shoots, we rub off the weakest; we also take off all barren or weak shoots. If any of them are not sufficiently developed we pass them over, and go over the vines again, in a few days after the first pinching.

The bearing branches having all been pinched back, we can leave our vines alone until after the bloom, only tying up the young canes from the spurs, should it become necessary. But do not tie them over the bearing canes, but lead them to the empty space on both sides of the vine, as our object must be to give the fruit all the air and light we can.

By the time the grapes have bloomed, the laterals will have pushed from the axils of the leaves on the bearing shoots. Now go over these again, and pinch each lateral back to one leaf, as shown in fig. 8. In a short time, the laterals on the fruit-bearing branches which have been pinched will throw out suckers again. These are stopped again, leaving one leaf of the young growth. Leave the laterals on the canes intended for next year's fruiting to grow unchecked, tying them neatly with bass or pawpaw bark, or with rye straw to the wires.

If you prefer training your vines on the horizontal arm system (Fig. 6), the mode of summer pruning will be in the main the same. Pinch off the end of each upright shoot *as soon* as it has made two leaves beyond the last bunch of fruit; the shoots after being stopped will soon start, and after growing a few inches should be stopped again, as we wish to *keep* them within the limits of the trellis, and the laterals should be stopped beyond its first leaf. Thus we try to keep the vine equally balanced in fruit, foliage, and wood. It will be perceived that fall pruning or shortening-in the ripened wood of the vine, and summer pruning, shortening-in and thinning out the young growth, have one and all the same object in view, namely, to keep the vine within proper bounds, and concentrate all its energies for a two-fold object, namely, the production and ripening of the most perfect fruit, and the production of strong, healthy wood for the coming season's crop. Both operations are, in fact, only different parts of one and the same system, of which summer pruning is the preparatory, and fall pruning the finishing part. The importance of this matter is so great that we subjoin—

HUSMANN'S METHOD OF SUMMER PRUNING THE VINE.

[Extract from his excellent articles in the "*Grape Culturist*" on this most important operation.]

Without proper and judicious summer pruning, it is impossible to prune judiciously in the fall. If you have allowed six to eight canes to grow in summer where you need but two or three, none of them will be fit to bear a full crop, nor be properly developed. We prune longer in fall than the majority of our vintners, which gives a double advantage: should the frost of winter have injured or killed any of the first buds, we still have enough left; and should this not be the case, we still have our choice to rub off all imperfect shoots; to reduce the number of bunches at the first pinching, and

thus retain only strong canes for next year's fruiting, and have only large, well developed bunches.

But to secure these advantages we have certain rules, which we follow strictly. We are glad to see that the attention of the grape growers of the country is thoroughly aroused to the importance of this subject, and that the old practice of cutting and slashing the young growth in July and August is generally discontinued. It has murdered more promising vineyards than any other practice. But people are apt to run into extremes, and many are now advocating the "let-alone" doctrine. We think both are wrong, and that the true course to steer is in the middle.

1. Perform the operation **EARLY**. Do it as soon as the shoots are six inches long. At this time you can overlook your vine much easier. Every young shoot is soft and pliable. You do not rob the vine of a quantity of foliage it can not spare (as the leaves are the lungs of the plant and the elevators of the sap). You can do three times the work that you can perform a week later, when the shoots have become hardened, and intertwined by their tendrils. Remember that the *knife* should have nothing to do with summer pruning. Your thumb and finger should perform all the work, and they can do it easily if it is done early.

2. Perform it *thoroughly and systematically*. Select the shoots you intend for bearing wood for next year. These are left unchecked; but do not leave more than you really need. Remember that each part of the vine should be thoroughly ventilated, and if you crowd it too much, none of the canes will ripen their wood as thoroughly nor be as vigorous as when each has room, air and light. Having selected these, commence at the bottom of the vine, rubbing off all superfluous shoots, and all which appear weak or imperfect. Then go over each arm or part of the vine, pinching every fruit bearing branch above the last bunch of grapes, or, if this should look weak or imperfect, remove it and pinch back to the first perfectly developed bunch. Should the bud have pushed out two or three shoots, it will generally be advisable to leave only the strongest, and remove the balance. Do not think that you can do part of it a little later, but be unsparing in taking away *all* you intend to take this time. Destroy all the caterpillars, and all the insects you find feeding on the vines, the steel-blue beetle, who will eat into the buds. But protect the lady-bug, mantis, and all the friends of the vine.

We come now to the second stage of summer pruning. After the first pinching, the dormant buds in the axils of the leaves, on fruit-bearing shoots, will each push out a lateral shoot, opposite the young bunches. Our second operation consists in pinching each of these laterals back to *one leaf as soon* as we can get hold of the shoot above the first leaf, so that we get a young and vigorous leaf additional, opposite to each bunch of grapes. These

serve as elevators of the sap, and also as an excellent protection and shade to the fruit. Remember our aim is not to rob the plant of its foliage, but to make *two* leaves grow where there was but *one* before, and at a place where they are of more benefit to the fruit. By our method, our rows of vines have the appearance of leafy walls, each bunch of the fruit properly shaded, and yet each part of the vine is properly ventilated. We come now to another of those accidental discoveries, which has proved of great use to us in the management of the Concord, Herbemont, Taylor, etc. In the summer of 1862, when a piece of Concord, planted in 1861, was growing rapidly, a severe hail storm cut up the young shoots, completely defoliating them, and breaking the tender and succulent shoots at a height of about two feet. The vines were growing rapidly, and the dormant buds in the axils of the leaves immediately pushed out laterals, which made very fair sized canes. In the following fall, when we commenced to prune, we found from three to five of these strong laterals on each cane, and accordingly shortened them in to from three to five and six buds each. On these laterals we raised as fine a crop of grapes as we ever saw, certainly much finer than we had ever before raised on the strong canes; and we have since learned to imitate hail storms by pinching the leaders of young shoots when they have grown, say two feet, forcing out the laterals and growing out fruit on the latter, thus meeting with another illustration of the old proverb, "It is an ill wind that blows nobody any good."

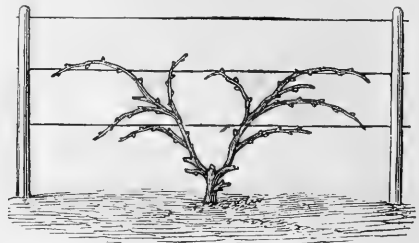
After the second pinching of the fruit-bearing branches, as described above, the laterals will generally start once more, and we pinch the young growth again to one leaf, thus giving each lateral two well developed leaves. The whole course should be completed about the middle of June here, and whatever grows afterwards may be left. In closing, let us glance at the *objects* we have in view:

1. To keep the vines within proper bounds, so that it is at all times under the control of the vintner, *without weakening its constitution by robbing it of a great amount of foliage.*
2. *Judicious thinning of the fruit* at a time when no vigor has been expended in its development.
3. *Developing strong, healthy foliage,* by forcing the growth of the laterals and having *two* young, healthy leaves opposite each bunch, which will shade the fruit and serve as conductors of the sap to the fruit.
4. *Growing vigorous canes for next year's fruiting and no more,* thereby making them stronger; as every part of the vine is thus accessible to light and air the wood will ripen better and more uniform.
5. *Destruction of noxious insects.* As the vintner has to look over each shoot of the vine, this is done more thoroughly and systematically than by any other process.

Different varieties will require somewhat different treatment, some varieties (strong growers) will fruit better if pruned to spurs on old wood, than on the young canes (retaining the old canes and pruning the *healthy*, strong shoots or laterals they have to two buds), whereas others (only moderate growers) will flourish and bear best when pruned short and to a cane of last season's growth. The observing vintner will find some hints in our descriptive catalogue, but only by practice and experience can he learn the best method for each variety.

SUBSEQUENT MANAGEMENT.

We may now consider the vine as fully established, able to bear a full crop, and when tied to the trellis in spring, to present the appearance as shown in fig. 9.



(Fig. 9.)

The operations are precisely the same as in the third year. If you train your vines on the horizontal system, the upright canes, which were pruned back to two buds each, will now produce two shoots each. If more than one shoot should proceed from *each* of these *two* buds, or if other shoots should start from small buds near the arms, only the strongest one should be allowed to grow and all others rubbed off. Instead of ten to twelve upright canes, you will have twenty to twenty-four, and allowing three bunches to each, you may get seventy bunches to every vine, the fourth year after planting. These canes are now to be treated the same, as regards stopping, pinching laterals, etc., during each subsequent year of their growth.

There are many other modes and systems of training, but the same general rules and principles prevail in nearly all.

There is one well authenticated fact in the fruiting of the grape, viz: that the finest fruit, the best, earliest and largest crops, are produced upon the strongest shoots of the previous years' growth. The only proper system of pruning will therefore be that which encourages and secures an abundance of such shoots. By this general principle all new systems, so called, should be proved, and beginners in grape culture may be able to guard against receiving false impressions with reference to any mode which may fall under their observation; and this caution is the more necessary as young vines will bear good crops for a *few* years, even under very indifferent treatment. In all systems of training

which involve the retention of wood beyond five or six years, as in the case of spur pruning, and the methods with permanent horizontal branches, it is absolutely essential to remove the older wood at certain periods, and replace it with younger wood from near the base of the plant.

If you desire to train your vines for arbors or on walls, leave but one shoot to grow during the first summer, and if necessary even the second, so that it may get very strong. Cut back to three eyes in fall, these will each throw out a strong shoot, which should be tied to the arbor they are designed to cover, and allowed to grow unchecked. These three canes will be cut back in the fall following to three buds each, which will give us three principal branches, each with their canes the third or fourth season; of each of these branches, cut next fall one

cane to two eyes, and the others to six or more buds, according to the strength of the vine, then gradually increase the number of branches and cut back more severely those which fruited. In this manner a vine can be made in course of time to cover a large space, produce a large quantity of fruit, and get very old.

Those who desire further information and directions on various modes of pruning and training, or on the culture of grape vines in glass houses, we refer to Chorlton's Grape Vines in glass houses, we refer to Chorlton's Grape Growers Guide and Fuller's Grape Culturist; also, to an article on Pruning and Trailing the Grape Vine, by Wm. Saunders, United States Department of Agriculture Report, 1866.

A new system.

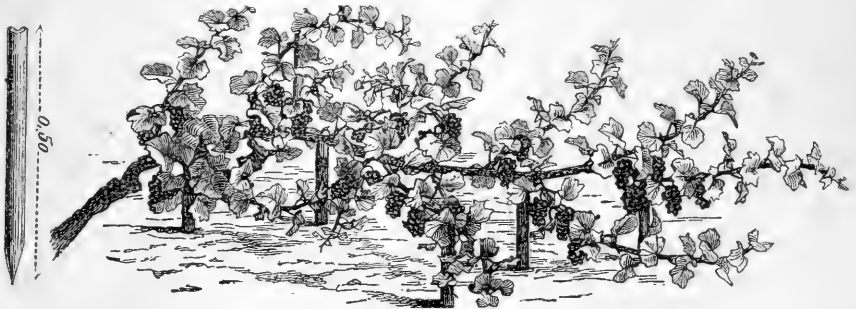


Fig. 10.—Trailing Chain, supported by wooden forks, at maturity.

THE TRAILING CHAIN CULTURE.

Is, however, attracting much attention, and seems too interesting to be entirely omitted. We extract the following from the *Journal of Agriculture*, published by R. P. Studley & Co., St. Louis Mo.

The following extracts are taken from a description of the new method embodied in a "Report on Grape Culture in N. W. France," addressed to the Minister of Agriculture by Dr. Guyot, the celebrated Professor of Agronomy: I have just been shown a new system of grape culture, invented by a poor vintner of Beaune. It is called "Trailing Chain Culture." I have never seen anything more wonderful in its wild simplicity. Imagine every vine having three or five arms, four to six yards in length, trailing near the ground; and each arm bearing three or four fruit branches, four to six feet long. Imagine now every one of these fruit branches overloaded with magnificent grape bunches, in the perfection of maturity. These branches are raised from the ground by means of small wooden forks, about eighteen inches high, so as to prevent rot. Then imagine, intermixed with these fruit garlands, immense supplementary canes running among the bearing branches, and you will be startled as I was. And when you are told besides that after leaf falling, or before pruning, all these long arms are gathered up, and thrown over on the next row to allow full freedom to the plow, and then easily put back to their original position, you will admire the sound judgment and reasoning of that humble vintner who, in the face of traditional routine, contended and proved that the vine

must grow in perfect freedom and acquire its full arborescent size to secure good fruit; that it must always stand near the ground to insure perfect maturity, and that both these conditions (given the elasticity of limb in the vines) could be made to reconcile with the necessity of a thorough, prompt, and economical till-

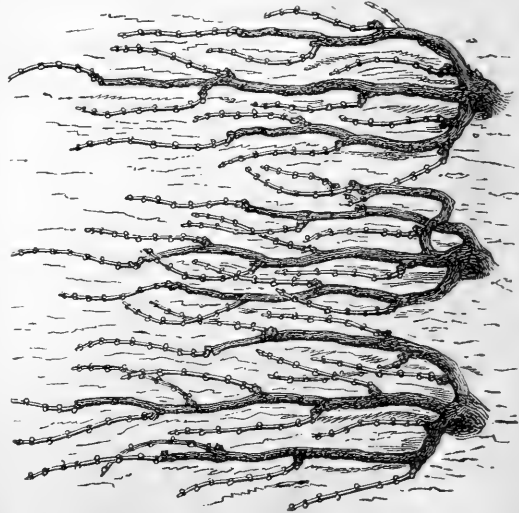


Fig. 11.—Vine in Trailing Chain, 6 ft. apart in the row.

age. And he proved also that his long fruit branches were the best safeguard against spring frosts. The large amount of space between the rows affords the roots

a free extension in the subsoil, so that those vines, which occupy about one-fifth of the ground, yield as much wine as will a surface five times larger where the plants are set closer; and besides, the soil requires no manure, it being contended that the vines are far enough apart to be able to send their roots at greater distances without starving each other. While it equals the dimensions obtained by the trellis culture, it has over it the immense advantage of being not only cheap, but relatively free from repairs.

The vines can spread out unrestrained over the ground, which is kept perfectly clean by plowing, harrowing, and rolling. It is the soil which in this case is their trellis, and which, reflecting the heat, gives a condition of perfection far superior to the insolation and exposure in mid air afforded by the trellis. The plow can work close to the vines, and leave almost nothing to be done by hand. The rule is to plow twice, as deep as possible; the surface roots or rootlets perishing every year, there is no danger to be apprehended in scouring deeply the intervals of the rows; it favors fruition and prevents running. For this purpose the vines are gathered up, and the long arms thrown back temporarily on the next row. The soil, in the locality where the new method has best succeeded, is rather a poor quality of sandy clay, and ranges as third rate wheat land. On poor soil it will always succeed better than closely pruned vines, the size attained by the plants giving a corresponding strength to the roots.

The chief points gained may be summed up as follows:

1. With the "trailing chain culture" the amount of labor has been reduced one-half.
2. The costly outlay of setting up and keeping in order trellises, stakes or poles, is dispensed with.
3. Any intelligent farmer can master the whole system easily.
4. No special or peculiar implements are used; common farm instruments only are needed.
5. The distance between the rows affords to wagons, carts, etc., free access to every part of the vineyard, for all purposes.
6. The danger of spring frost is hardly to be dreaded.
7. The yield is one-third and frequently one-half greater than with the old process. The new system is being extensively followed wherever known; and large numbers of French vintners not only set out their new vineyards on this plan, but have the old ones remodeled, by pulling up three rows out of every four, so as to have about 16 feet between the remaining rows. This speaks volumes in favor of the "trailing chain," when we consider the price of land and the long standing of the old system in France.

Forks.—As soon as the blooming season is over, the vines are set on forks, which keep them at a height of from 15 to 20 inches, using for this purpose short sticks,

either fork-shaped or notched on the top. (See fig. 10.) Three or four are at first sufficient, but when the fruits are nearing maturity, care is taken to supply as many as may be necessary to keep the grapes from soiling or rotting. While the height mentioned answers this purpose, the vines are yet low enough to insure perfect maturity of the fruit, and superior bouquet to the vine.

Planting.—The mode of planting most in use, consists in digging trenches twenty inches wide and twenty-six inches long (fig. 12). The fibrous rootlets are elbowed

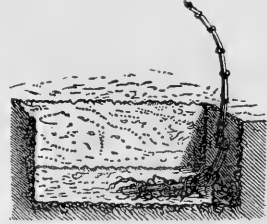


Fig. 12.—"Trough Method" of Planting.

on the ground, raised up vertically, and the trench is filled up, but not packed hard. Some leave one, others two eyes above the ground.

Pruning.—The canes are formed successively upon one, two and three main branches. These produce shoots, among which one is chosen to form the leader; two spurs are also left to produce laterals the following season, and in this manner the main arms attain gradually 15 to 18 feet. These can be and are frequently shortened in, and allowed to grow again in the same manner.



Fig. 13—First year.



Fig. 14—Second year.

The first year only one spur is left to grow (fig. 13). The second year, two fruit branches are retained (fig. 14) which have to be cut back to 18 or 20 inches, leaving only four or five buds to grow on each.



Fig. 15—Third year.

The third year, (fig. 15), of the four or five buds grown the preceding year, only two are kept on each branch.

Each succeeding year (figs. 16 and 17) two more branches are added to the number until there are 50 or 60 of them, if the richness of the soil and the strength of the plant admit of it. When twelve years old, the stock should



Fig. 16—Fourth year.



Fig. 17—Fifth year.

be able to bear that amount. The arms are allowed to grow to 15 feet or more, leaving one fruit branch every 24 inches, and carefully removing all useless buds before the sap is ascending; and here is shown one of the immense advantages of the trailing chain culture for regions subject to spring frosts. One-half, or at least fully one-third of the numerous buds do not come out when the sap commences running upwards, so that should the early buds be swept off by a late frost, those that remained dormant come out in their turn and take possession of the sap. Experience has fully demonstrated this superior advantage.

Heading off.—This important operation is performed three times during the season; first, as soon as vegetation starts; next, when it has attained four to six inches; and lastly, at blooming time. As is well known, it consists in removing the non-bearing buds, which are not to be used in pruning the following year, and its object is to keep up the strength of the main stem and branches, and relieve them of a greedy and useless growth, thereby benefiting the fruitful buds, and those which are to extend the branches of the stump. The grape requires a denuded surface around it, always proportioned to its extension.

DISEASES OF THE GRAPE VINE.

The vine, with all its vigor and longevity, is no less subject to diseases than all other organic bodies, and as we can not remove most of their causes, and can even with the best care prevent and cure but few, our first attention must be given to the selection of healthy plants and of hardy varieties. You have already been warned against planting the Grape Vine in heavy, wet soil, where water stagnates, or in places exposed to early and late frosts. You have been impressed with the necessity of clean cultivation, stirring the soil, of proper training, and of thinning the fruit. If you disregard these points, even the healthiest and most vigorous varieties of vines will become diseased.

The Mildew is probably our most formidable disease. It is a fungus usually found on the leaves of the Grape;* first a single small white speck, it soon extends over the whole surface and even completely through the leaf, and destroys its functions. The European varieties are more subject to this disease than our indigenous sorts. In France and Germany it is said to be successfully combated with flour of sulphur, early and often applied, (with the aid of sulphur bellows) on the lower surface of the leaves. With our prices of labor it would scarcely be practicable except in cold grape-tries or garden culture, and it is best not to plant largely of those varieties which are very liable to this disease.

The Rot. There are several kinds of *Rot* in the berries, specially prevalent in wet seasons; and whatever the causes, the best method to pursue is

* This remarkable wet season (1869) the mildew affected at once the young fruit bunches, and destroyed early in July the entire crop of the fine vineyards at Put-in Bay, Kelley's Island, and many other grape regions.

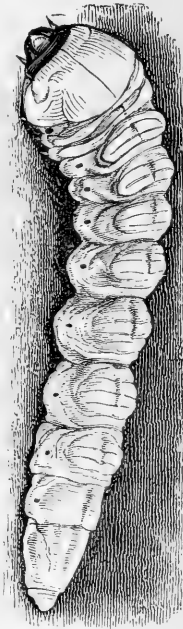
to choose varieties that are least liable to be affected, and to plant them upon well drained soil.

Sun-scald is another disease. The leaves seem to become blistered or burnt; that portion injured will turn brown, and in a few days it becomes dry and crisp. If the leaves are much injured by sun-scald the fruit does not mature. (This shows the absurdity of removing the leaves to make the grape ripen better or sooner.) Sun-scald and mildew often go together, and vines affected by the one are very likely to be attacked by the other.

There is another species of fungus called *rust*, and some other diseases, but they are by far less injurious and formidable than the many noxious

INSECTS.

[After our eminent Entomologist, Prof. Ch. V. Riley's first annual report, 1869, and the *American Entomologist*.]



[Fig. 18.]

The **GRAPE ROOT BORER** (fig. 18) cuts the vine off from its roots about three to four inches underground; it is mostly found in *Concords*, and is becoming quite destructive. Little can be done in the way of extirpating these underground borers, their presence being only indicated by the death of the vine. Wherever you find vines suddenly dying from any cause unknown, search for this borer, and upon finding one, (in each case we have found but *one* at each tree or vine) put an end to his existence.

The **BEETLE** of this borer (fig. 19) should also be ruthlessly killed. We lost many pear trees by the same pest, and we fear it may have come into our vineyard and orchard from old oak stumps near by.

By far less dangerous, though more numerous, is the common **GRAY CUT WORM**, which eats the young, tender shoots of the vine and draws them into the ground below; it has destroyed, or kept back at least, many a young vine. The little rascal can be easily found and destroyed by digging for him under the loose clods of ground beneath the young vine.

Small worms, belonging to the family of **LEAF-**



(Fig. 19.)

FOLDERS, will in spring make their webs among the young downy leaves at the ends of the shoots, eating the young bunches and leaves. These must be destroyed when summer pruning for the first time in each season.

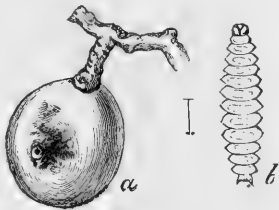


(Fig. 20.)

THE GRAPE-VINE FIDIA (fig. 20), almost universally miscalled the Rose-bug, is one of the worst foes of the grape-vine in Missouri. It makes its appearance during the month of June, and by the end of July has generally disappeared.

When numerous it so riddles the leaves as to reduce them to mere shreds. Luckily this beetle drops to the ground upon the lightest disturbance, and thus enables us to keep it in check, by taking a large basin, with a little water in it, and holding it under the insect. At the least jar the bugs will fall into the dish. When a quantity have thus been caught, throw them into the fire or pour hot water upon them. Mr. Poeschel, of Hermann, raised a large brood of chickens and had them so well trained that all he had to do was to start them in the vineyard with a boy in front to shake the infested vines, and he himself behind the chicks. They picked up every beetle that fell to the ground; and next season he could scarcely find a single beetle.

THE GRAPE CURCULIO.—The larva of this curculio infests the grapes in June and July, causing a little black hole in the skin, and a discoloration of the berry immediately around it, as seen in the annexed (figure 21). From the middle to the last of July this larva leaves the berry and buries itself a few inches in the ground, and by the beginning of September the Grape-Curculio beetle issues from the ground, and doubtless passes the winter in the beetle state, ready to puncture the grapes again the following May or June. This curculio is small and inconspicuous, being of a black color with a grayish tint. It is



(Fig. 21.)

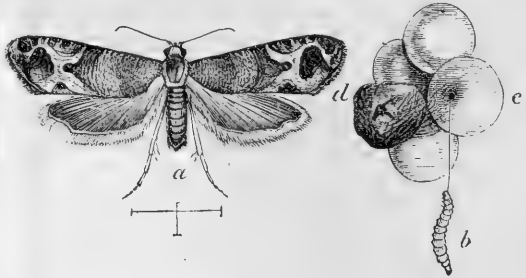
represented enlarged at fig. 22, the hair line underneath showing the natural size. Strange as it may seem, while in 1867 this Grape Curculio was quite common, in 1868 there seems to have been an almost entire immunity from it, caused no doubt by parasites, which killed the larva. It is thus that Nature works: "Eat and be eaten, kill and be killed," is one of her universal laws, and we can never say with surety because a particular insect is numerous one year, therefore it will be so the next!



(Fig. 22.)

But while this one insect has become rare, a new

species suddenly appeared—the GRAPE BERRY MOTH. It has been observed in different parts of Ohio, Missouri and Southern Illinois for about three years past, and all testify that it has gradually been on the increase. About the 1st of July the grapes that are attacked by the worm begin to show a discolored spot at the point where the worm entered (see fig. 23, c.) Upon opening such a grape, the



(Fig. 23.)

inmate will be found at the end of a winding channel. It continues to feed on the pulp of the fruit, and upon reaching the seeds, generally eats out their interior. When full grown it presents the appearance of fig. 23, c, and is exceedingly active. As soon as the grape is touched the worm will wriggle out of it, and rapidly let itself to the ground, by means of its ever ready silken thread, unless care be taken to prevent its so doing. The cocoon is often formed on the leaves of the vine, in a manner essentially characteristic; the worm cuts out a clean oval flap, leaving it hinged on one side, and, rolling the flap over, fastens it to the leaf, and thus forms for itself a cozy little house; there the worm changes to a chrysalis. In about ten days after this last change takes place, the chrysalis works itself out of the cocoon and the little moth, represented at fig. 23, a, makes its escape. As a remedy, we recommend picking up all fallen berries and converting them into vinegar; as upon racking off the juice and water, countless numbers of these worms are found in the sediment.

The THRIP, a very minute, whitish green insect, has of late been very troublesome, and we regret to say that Mr. Fuller is mistaken in believing that the thrip seldom attacks the vine in the open air. Here they are a great annoyance, and at Hermann the thrip has defoliated whole vineyards. As a remedy, it has been recommended that one man carrying a lighted torch go through the vineyard at night, another jarring the vines, when the thrip will fly into the flame.

The APHIS, or plant louse, and many other insects, attack more or less also the grape vine, but they can generally be easily found and destroyed. Besides the insect, you will have yet other enemies to combat: foxes and birds, and, worst of all, some two-legged beings in human shape—thieves—who will steal your grapes if you do not watch and

threaten to keep them off with powder and shot. We do.

GATHERING THE FRUIT.

Whether it be for the table or for wine, do not pick the grape before it is fully ripe. Every grape will color before ripe; some do so several weeks before, but when thoroughly ripe the stem turns brown and shrivels somewhat. The finest qualities, the sweetness and aroma of the grape-juice are fully developed only in the perfectly matured grape.* This noble fruit does *not* ripen, like some other fruit, after being gathered. Always gather the grapes in fair weather, and wait till the dew has dried off before commencing in the morning. Cut off the clusters with a knife or shears, and clip out the unripe or diseased berries, if any, taking care, however, that the bloom shall not be rubbed off, nor any of the berries broken.

For *packing* grapes for market, shallow boxes, holding from five to twenty pounds, and especially manufactured for the purpose in all the principal grape regions, costing about one cent per pound, are used. In packing, the *top* is first nailed on and a sheet of thin white paper put in; whole bunches of grapes are first put in; the vacant places left are filled with parts of bunches, so that all the space is occupied and the whole box packed, as closely and as full as possible, without jamming. Another sheet of paper is now laid on and the bottom nailed down. By this means, when the boxes are opened, only entire bunches are found at the top.

Grapes could be easily preserved for months if you had a cool room or cellar, where the temperature could be kept between 35° and 40°. In a warm, damp atmosphere, grapes will soon rot. Mr. Fuller recommends, for preserving grapes, to bring them first into a cool room, spread them out and let them remain there for a few days, until all surplus moisture has passed off; then pack them away in boxes, placing the bunches close together, and thick sheets of paper between each layer. When the boxes are filled put them away in a cool place; examine them occasionally and take out the decayed berries, from time to time, as they appear. If the place is cool and the fruit *ripe* and sound, they will keep three to four months. The best mode of preserving the delicious juice of the grape, with its

*And we consider the *late* ripening varieties as far superior, especially for wine, to the *early* kinds; but, of course, only in such localities where *late* grapes will mature

delightfully nutritious constituents, in a concentrated and almost imperishable form, is by

WINE MAKING.

But it would exceed the scope and purpose of this Catalogue to treat on this subject; nor do we claim to possess that knowledge which it would require. Husmann's excellent book, "The Native Grape and Manufacture of American Wines," and Reemelin's Wine Maker's Manual, are especially recommended to beginners. The "*Grape Culturist*," this excellent new journal, devoted also to wine making, (if properly supported,) will give you also a treasure of information on this subject. But our experience and observation impel us to advise our friends who desire to make wine on a large scale, to engage some experienced man who knows how to treat wines; and there are already plenty of them and many more of them daily arriving in this country. It need not be a Professor of Chemistry, who may only adulterate the wines by his scientific manipulations; on the contrary, we would prefer a plain German "wine cooper," or French "vigneron," one who is used to attend to wines himself from his youth, to watch them with the care and cheerfulness of a mother to her infant, and who will not permit your wines to leave his nursing hands before they *are and will keep* clear and perfect, racking off and filling up whenever required, and keeping not merely your casks and bottles, but every part and corner of your cellars most admirably clean.

If you should say that you cannot afford to keep such a man, then, we say, you cannot afford to build cellars either; and you would do best to associate for the purpose with one or more of your neighbor grape growers. But if you *have* your own cellars and plenty of grapes, you can certainly afford to pay such a man, and to pay him *well*, at least until you or your sons have learned from him.

Then only shall we be able to produce *the best*, to establish a reputation for American wines equal to those of Europe, and to compete with them; then only shall we be able to provide for ourselves and for the people of this continent, that healthy and delicious beverage, known for all times to be the promoter of civilization; excessive whisky drinking will gradually vanish; our national temperament will be more joyous and happy, and grape growing permanently profitable.

DESCRIPTIVE CATALOGUE.

Adirondac. Originated at Port Henry, Essex Co., N. Y.; (first noticed 1852.) Probably a seedling of the Isabella. Ripens very early—about the same time with the Hartford Prolific. *Bunch* large, compact, not shouldered; *berry* large, oblong, black, covered with a delicate purple bloom, transparent, with tender pulp; thin skin; juicy and vinous; quality *best*, “when you can get it.”

“The nearest approach to a foreign grape.”

—Husmann.

“More nearly resembles the Black Hamburg than any hardy grape yet known.”—F. R. Elliot.

Reports *not* generally satisfactory. A slow, tender grower. Young vines have mildewed and older ones need protection. Blooms early, and fruit destroyed by late frosts. Reported as doing well at Alton, Ill., Lockport, N. Y., Dist. Col. in 1867; bearing abundantly at Delaware, O., 1868. *Wine*, agreeable flavor, low in sugar and acid. Must, 70°.

Allen's Hybrid. Raised by J. F. Allen, Salem, Mass.; a cross between the *Golden Chasselas* and the *Isabella*. Ripens early, about with the Concord. [*Bunches* large and long, loose; *berries* full medium to large; skin thin, semi-transparent; color nearly white, tinged with amber; flesh tender and delicate, without pulp, juicy and delicious; quality best. It is apt to mildew and rot, and can not be recommended for general culture, though it is worthy a place in amateur collections.

Anna. Seedling of Catawba, raised by Eli Hasbrouck, Newburg, N. Y., in 1852. Not worth planting *here*; unhealthy and feeble.

“Matures most beautiful fruit, say one year in five.”—F. R. Elliot.

G. W. Campbell, however, describes it as very hardy and healthy, of a moderate growth. *Bunches* rather loose, of medium size; *berries* medium; color light amber, with small dark specks, covered with thin, white bloom. Rather pulpy. Ripens with the Catawba; makes a fine, highly flavored wine.

Alvey. (Hagar) Southern. (*Test.*) *Bunches* loose, shouldered; *berries* small, round, black, early; sweet, juicy, and vinous, without pulp; fine flavor when fully ripe; hardy and healthy, but a slow grower, making a stout, short-jointed wood; moderately productive. Very promising in deep soils, rich river bottoms, etc. Excellent in quality, and will make one of the *best* red vines, but is apt to drop its leaves on southern slopes; seems to prefer the deep, rich, sandy loam of our northeastern or even northern slopes. Must 85°—91°.

Amanda. (*Labr.*) *Bunch* medium, compact; *berry* medium, round, pale red; quality good; ripens early and promises well.

Arrott. (*Labr.*) Philadelphia; *bunch* and *berries* medium, white; resembling the Cassady in appearance, but not as good.

“Sweet and good, with a thick skin; good grower, and productive.”—Husmann.

Aughwick. (*Cord.*) A new grape introduced by Wm. A. Fraker, Shirleysburg, Pa. *Bunches* shouldered, similar to Clinton; *berries* larger than Clinton; black, juice very dark, of spicy flavor; said to make a very dark red wine, of superior quality, and to be entirely free from rot or mildew; very hardy and healthy.

Arnold's Hybrids.* See Othello (No. 1). Cornucopia (No. 2). Autuchon (No. 5). Brant (No. 8). Canada (No. 16).

*Mr. Charles Arnold, of Paris, Canada, has been very successful in his experiments in hybridizing the native Clinton with the pollen of foreign varieties. His seedlings seem to be of decided promise, and they would doubtless improve greatly by being cultivated in localities where the season is longer than it is in Canada. The Committee of the Paris Horticultural Society say in their report: “We find the most prominent characteristics of them as a class are: first, perfect hardiness and vigorous growth; second, early ripening both of the fruit and wood, and as yet remarkable freedom from disease, with large handsome foliage of a very distinct character and not woolly; *bunches* large on the average; the *berries* larger than medium; skin thin, and in all the numbers we tested free from pulp, and with a full, pleasant, sprightly flavor; our judgment being based not on a cursory examination, but from having known them for the last two seasons.”



AGAWAM (Roger's Hybrid No. 15.)

Agawam. (Roger's Hybrid No 15.) Considered by him as his best variety before the introduction of the "Salem." It is a dark red or maroon grape, of the Hamburg cross; early. *Bunches* large, compact, often shouldered; *berries* very large; skin thick; pulp soft; sweet, sprightly, and of peculiarly aromatic flavor; productive, and of great vigor of growth. In some localities it has been subject to mildew and rot, and Mr. Husmann says; Its strong peculiar flavor is to me far from agreeable. We consider it perhaps the least desirable of his valuable varieties. The character of the cluster and leaf is shown in above figure.

Autuchon. (Arnold's Hybrid, No. 5.) A seedling of Clinton crossed with Golden Chasselas. Leaves dark green, very deeply lobed and sharp pointed serratures; the unripe wood is very dark purple, nearly black. *Bunches* very long, not heavily shouldered, rather loose; *berries* medium size, round, white (green), with a moderately firm, but readily melting flesh and an agreeable sprightly flavor, resembling the White Chasselas. Skin thin without astringency. Ripens with the Delaware. Mr. Samuel Miller, the originator of the "Martha," bestowed the following high encomium upon the new grape:



THE AUTUCHON GRAPE.

"I always considered Martha the best white native grape, but since seeing and tasting the Autuchon, I haul down my colors. If it will ripen like this in Canada, and if it improves by coming here like Rogers' and other northern grapes, then it seems to me we have all that can be desired. It alone is a treasure."

We give a figure of the Autuchon on the preceding page.

Barry. (Rogers' No. 43.) One of the most attractive of his Hybrids. *Bunch* large, rather broad and compact; *berry* medium roundish; color black; flesh tender, of a sweet, pleasant flavor; skin thin, somewhat astringent. Very productive and early (ripens with the Concord.)

Baxter. *Bunch* large and long; *berry* below medium, black, hardy and productive; not fit for table, but may be valuable for wine.—*Bluffton Wine Co.*

Berks, or Lehigh. (*Labr.*) *Bunch* large, shouldered, compact; *berry* large, round, red, little pulp, good quality; *vine* vigorous grower, similar to Catawba.

Black Hawk. A seedling from the Concord, grown by Samuel Miller.

"*Bunch* large, rather loose; *berry* large, black, round, juicy, sweet; pulp very tender; ripens full as early as the Concord, is superior in quality, and seems to be healthy and hardy."—*Geo. Husmann.*

It has the remarkable peculiarity that its leaf is so dark a green as to appear almost black.

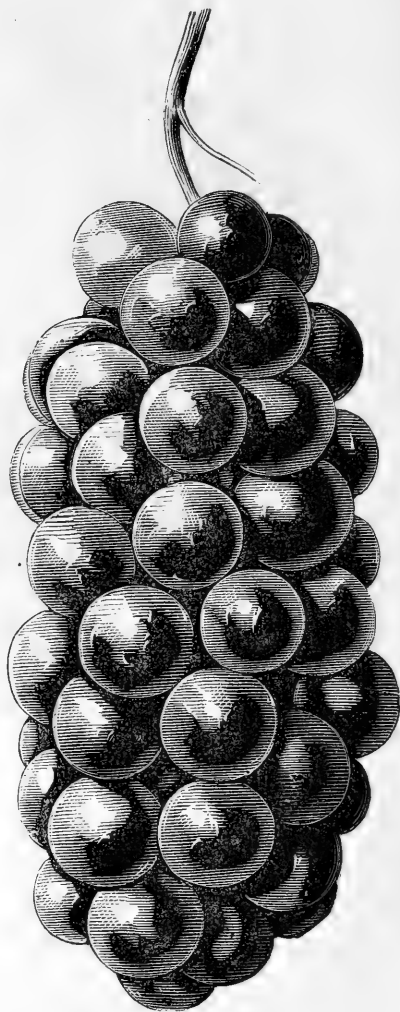
Blood's Black. (*Labr.*) *Bunch* medium, compact; *berry* medium, round, black, somewhat foxy, but sweet and good. Very early and productive, therefore valuable for early marketing. (Resembling *Mary Ann*, and has often been confounded with it.)

Blue Dyer. "*Bunch* medium; *berries* small, black, very dark juice, promises well for wine."—*Husmann.*

Brant. (Arnold's Hybrid No. 8.) Seedling of Clinton crossed with Black St. Peters. The young leaves and shoots dark blood red; leaves very deeply lobed. *Bunch* and *berry* resembling the *Clinton* in appearance, but greatly superior in flavor when perfectly ripe; free from pulp, all juice; seeds small; perfectly hardy. A very early and desirable grape.

Catawba. (Synonyms: Red Muncey, Catawba Tokay, Singleton.) This old and well-known variety is a native of North Carolina, and has its name from the Catawba river, where it was found, and introduced to notice some forty years ago, by John Adlum, of Georgetown, D. C. It has been for many years the standard wine grape of the country, and thousands of acres have been planted with it; but owing to its uncertainty, on account of the rot, mildew and leaf blight, it is now in many sections being discarded, and other more reliable kinds are planted instead. In localities where it will fully mature, and where it seems less subject to disease, there are very few better varieties.

In Missouri it has done better in 1868 than ever since 1857, owing probably to the very dry season. *Bunch* large, moderately compact, shouldered; *berries* above medium, round, deep red, covered with lilac bloom. Skin moderately thick; flesh slightly pulpy, sweet, juicy, with a rich, vinous and somewhat musky flavor. *Vine*, a vigorous grower; in favorable seasons and localities very productive. *Must* ranged from 86° to 91°; *acid* 12.3-10 to 13.2-10.



CANADA.

Canada. (Arnold's Hybrid No. 16.) Resembles the Brant (No. 8) in appearance, but ripens later and is praised for its rich aromatic flavor and delightful bouquet by all who taste it. *Bunch* and *berry* above medium; color black, with a fine bloom. A vigorous grower, with peculiar foliage; hardy, and matures its wood well. Will prove valuable for wine.

Cassady. Originated in the garden of H. P. Cassady, Philadelphia, Pa., as a chance seedling. *Bunch* medium, very compact, sometimes shoul-



THE CASSADY GRAPE.

dered; *berry* medium, round, pale green, covered with white bloom, when very ripe its color changes to light yellow; skin thick and leathery, pulpy, but with a peculiar honeyed sweetness which no other grape possesses in the same degree. Ripens with the Catawba. Vine a moderate grower, a true *Labrusca* in habit and foliage; immensely productive—so much so that nearly every fruit bud will push several branches, with from three to five bunches each.

This grape will flourish best on a north-eastern and northern slope. Its leaves are subject to sunscald on southern and south-eastern exposures.

Mr. Husmann cultivated it since 1858, and found it uniformly productive, not subject to rot and mildew, but very often the leaves would drop prematurely, and the fruit would not ripen well if grown in southern exposures. It makes an excellent white wine, which has often been taken for "Pfälzer,"

or even Rhenish wine by connoisseurs. For deep, rich, sandy soil, with north-eastern or northern exposure, we can safely recommend a trial with the Cassady. Perhaps, also, for river bottoms.

Specific gravity of *must*, 80° to 96°. Wine of a beautiful golden color, of a good body and delightful aroma. The "Arrott" resembles this grape very much, but is not as good.

Catawissa. See *Creveling*.

Challenge. Supposed cross between Concord and Royal Muscadine grown by Rev. Archer Moore, N. J. Very early; short, compact *bunches*, shouldered; large round *berries* pale red, with flesh slightly pulpy; very sweet and juicy. Extra hardy wood and leaf; prolific and promising; said to be an excellent dessert wine and raisin grape; not yet tested in the West.

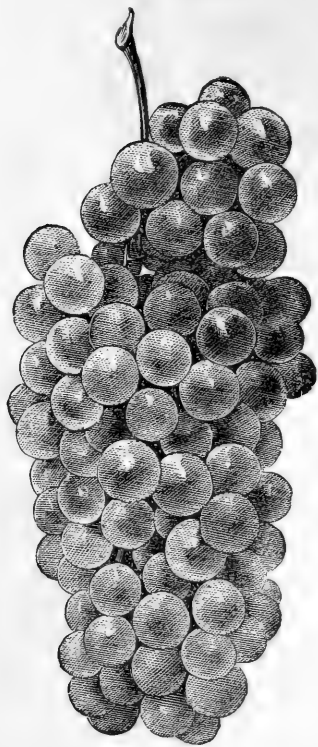
Clinton. (Synonym: Worthington,) Hamilton

Co., N. Y., (*Cord.*) *Bunches* medium or small, compact, not shouldered; *berry* round, small, black, with a blue bloom, skin thin, tough; flesh juicy, with little pulp, brisk and vinous; somewhat acid; sweeter the further south it grows; colors early, but should hang late (until after first frost) to become thoroughly ripe. Vigorous, hardy and productive; healthy, but an exceedingly rank, straggling grower, and one of the hardest vines to keep under control; it requires a good deal of room and spur pruning on old wood to bring forth its best results. Being one of the first to bloom in spring, it suffers sometimes from late frosts.

"The best poor land grape that is known."

—Cannon, of North Carolina.

Makes a good dark red wine, resembling claret; must, 93° to 98°, and sometimes exceeding 100°.



Clara. Supposed to be from foreign seed. A white (or pale amber) grape, very fine for the table; somewhat like Allen's Hybrid. *Bunch* long, loose; *berry* medium round, yellowish green, transparent, without pulp, sweet and delicious. Rather tender for general culture, and requires protection in the winter. No garden or amateur collection should be without it. The annexed figure of the Clara grape is reduced to one-fourth of natural size, (one-half diameter.)

Concord. (*Labr.*) Popularly known as "the grape for the million;" originated with E. W. Bull, Concord, Massachusetts. *Bunch* large, shouldered, rather compact; *berries* large, globular, black; thickly covered with a beautiful blue bloom; skin thin, cracks easy; flesh sweet, pulpy, tender; colors about two weeks before the Catawba, but should be allowed to hang late, to develop all its excellence. *Vines* very strong, rampant growers; coarse, strong foliage, dark green above, rusty beneath; proved very hardy and healthy, and is immensely productive. Its beautiful appearance makes it one of the most attractive market grapes, and it makes also a good refreshing wine, which is

becoming very popular. More vines of this variety are planted at the present time than of all other varieties together.

The Concord makes a light red wine, which is effectually becoming the laboring man's drink; can be produced cheap enough, is very palatable, and has a peculiar refreshing effect upon the system. A white wine may also be made of it by pressing the grapes without mashing them. Specific gravity of must about 70°.

Conqueror. A new seedling raised by Rev. Archer Moore, N. J., supposed cross between Concord and Royal Muscadine. Early; long loose-shouldered *bunches*; *berries* medium, glossy black, with a bloom; flesh slightly pulpy, juicy, sweet. *Vine* a free grower, hardy and healthy; said to be prolific; not yet fruited here.

Cottage. A new seedling of the Concord raised by E. W. Bull, Mass., the originator of that variety. Not yet disseminated.

Mr. Bull, in his successful efforts to improve our native grapes, began by sowing the seeds of a wild grape (*V. Labrusca*), from which he raised seedlings. He then sowed the seed raised from these, and obtained others, among which the Concord. He then raised 2000 seedlings before he got any that surpassed the Concord. In the fourth generation, or grandchildren of the Concord, he obtained seedlings far superior to the Concord, and nearly equal to the European grape (*V. Vinifera*). There seems to be no reasonable doubt that, as Mr. Bull thinks, the wild grape can, in a few generations, be made equal in quality to the European vine.—*U. S. Agr. Report for 1867.*

Creveling. (Synonyms Catawissa, Bloom.) Pennsylvania. *Bunches* long, loose on young vines, but on old ones sometimes as compact as Concord; *berries* medium to large, slightly oval; black, with blue bloom; flesh tender, juicy, and sweet; quality best; ripens early, a few days later than Hartford, and before Concord. *Vine* a fair grower, healthy and hardy; may be planted 6 by 6 feet apart, on northern and northeastern hillsides. This grape is rapidly growing in favor, but has not received the attention it deserves. Mr. HUSMANN says it makes an exquisite claret wine, intermediate between the Concord and Nortons in body, and superior in flavor to either. *Must*, 88°.

Cunningham. (Long.) A southern grape, belonging to the same class as the *Herbemont*; it originated in the garden of Mr. Jacob Cunningham, Prince Edward county, Va. Dr. D. N. Norton, a prominent horticulturist, the same who first cultivated and introduced to notice our invaluable Norton's Virginia grape, made wine from the Cunningham in 1835, and furnished to the Elder Prince, of Flushing, Long Island, the stock which was the base from which this grape has been disseminated, directly or indirectly. Dr. Norton pronounced the wine very similar to Murdock & Co.'s celebrated brand of Madeira. The Cunningham is very valuable for southern slopes with poor, light limestone

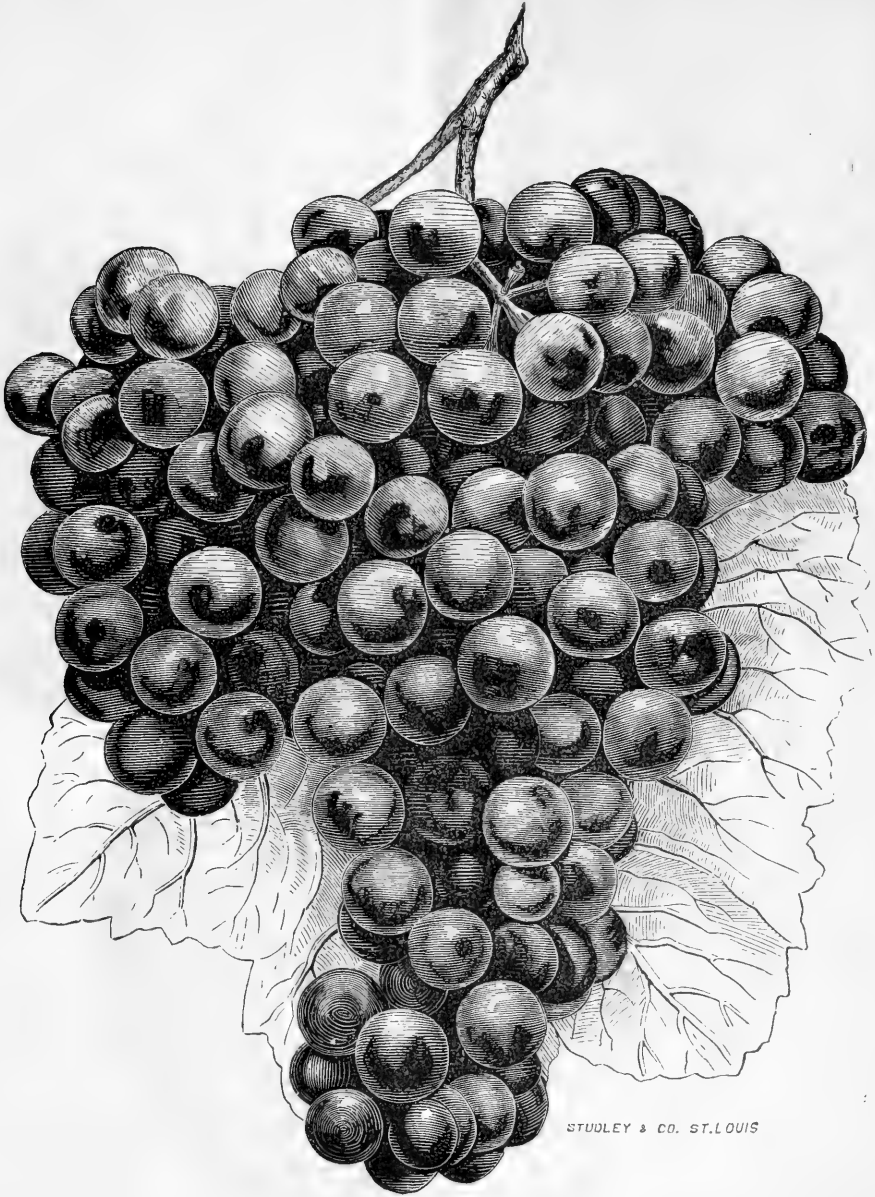


THE CUNNINGHAM GRAPE.

soils in *this latitude* AND FURTHER SOUTH. *Bunch* very compact and heavy, medium, shouldered; *berries* small, brownish black, juicy and vinous; *vine* a strong grower, HEALTHY and productive; to be so it needs, however, spur pruning on laterals and slight winter protection. Ripens its fruit *late*, and makes one of the most aromatic and delightful wines of dark yellow color. *Must*, 95° to 112°.

Cynthiana. (Synonym: Red River.) Received by Husmann in 1858, from William R. Prince, Flushing, Long Island, New York, Origin, Arkansas,

where it was, probably, found growing wild. "It is a true *Æstivalis* in all its habits, and resembles Norton's Virginia so closely, that it is impossible to distinguish the wood or leaf, although the bunch is generally somewhat more shouldered, and the berry more juicy and somewhat sweeter. *Bunch* of medium size, moderately compact, shouldered; *berry* below medium, round, black, with blue bloom, sweet, spicy, moderately juicy. Juice very dark red, weighs very heavy on the must scale, even higher than Norton's Virginia, and makes, so far,



STUDLEY & CO. ST. LOUIS

THE CYNTHIANA GRAPE.

our best red wine. It has as much body, or even more so, than Norton's Virginia, but is of exquisite flavor, much more delicate than Norton's, and can safely enter the lists with the choicest Burgundy wines. *Vine* vigorous and healthy, productive, as sure in its crops of well ripened fruit *here*, as any variety we know; but very difficult to propagate. Since it bore its first crop, in 1859, we have never seen a rotten berry on it. The fruit ripens some few days earlier than Norton's, and about a week earlier than Catawba. Specific gravity of *must*, from 98° to 118°, according to the season. While we can confidently recommend the *true* Cynthiana as *the best grape for red wine* which we have tried, we must

at the same time caution the public against spurious vines, which have been sent out under that name."

We copy the above description and cut from Mr. Husmann, of whom we also obtained our original stock and grape wood of this variety.

We look upon it as our best and most valuable grape for red wine, and have bestowed the best care and special attention on its propagation, so that we can offer reliable number one plants, with strong healthy roots, of this rare variety, to our customers, at a comparatively moderate price. Our stock of it is *very limited*. Order early!

Cornucopia (Arnold's Hybrid No. 2).

A seedling of Clinton crossed with Black St. Peters. *Vine* much resembling the Clinton in appearance, but superior in size of berry and bunch, and greatly superior in flavor; a most healthy grape and a great bearer. The Paris Horticultural Society reported on it as follows: This is undoubtedly one of the best grapes in the whole collection of Mr. Arnold's hybrid grapes; a very promising grape. *Bunch* large, shouldered, very compact; *berry* above medium size, black, with a beautiful bloom; flavor excellent, very sprightly, and pleasant; skin thin; seeds large, bearing nearly the same proportion to size of berry as in Clinton. Flesh melting, with very little pulp if any; seems to burst in the mouth; all juice, with a little acid and astringency; ripens with Concord. A good market grape, and "a good keeper."

Diana. A seedling of Catawba, raised by Mrs. Diana Crehore, Milton, Massachusetts. Mr. Fuller justly remarks:

"There is probably no one variety of grape in cultivation in regard to which there is a greater diversity of opinion, and its variableness fully warrants all that is said about it. In one section it is really excellent, while in another, perhaps near by it, it is entirely worthless. This difference is often observable in the same garden, and from no apparent cause."

The Diana seems to do best in warm, rather dry and poor soil; gravelly clay or sandy loam seems best suited to its wants. *Bunches* medium, very compact, occasionally shouldered; *berries* medium size, round, pale red, covered with a thin lilac bloom; flesh tender, with some pulp, sweet, juicy, with a musk flavor that is very strong until the fruit is fully ripe, and then often offensive to some tastes. Colors its fruit early, but does not really mature much earlier than the Catawba, which it resembles. It is not as productive nor quite as large in bunch and berry as the latter, but some think it superior in quality, and it has usually suffered less from rot. Its berries hold well, and its thick skin enables it to withstand changes of temperature better; hence the Diana improves by being left upon the vine until after pretty severe frost. As a variety for packing and keeping, it has no superior. *Eastern* grape growers claim it to be valuable also for wine. *Must* 88° to 90°; acid 12.3.

Diana-Hamburg. A new variety, said to be a cross between the Diana and Black Hamburg, originated by Mr. Jacob Moore, of Rochester, N. Y. *Bunches* generally large, sufficiently compact, well shouldered; *berries* above medium, slightly oval, of a rich fiery red color when fully ripe; flesh tender, of very sweet flavor, equal to some of the



CORNUCOPIA.

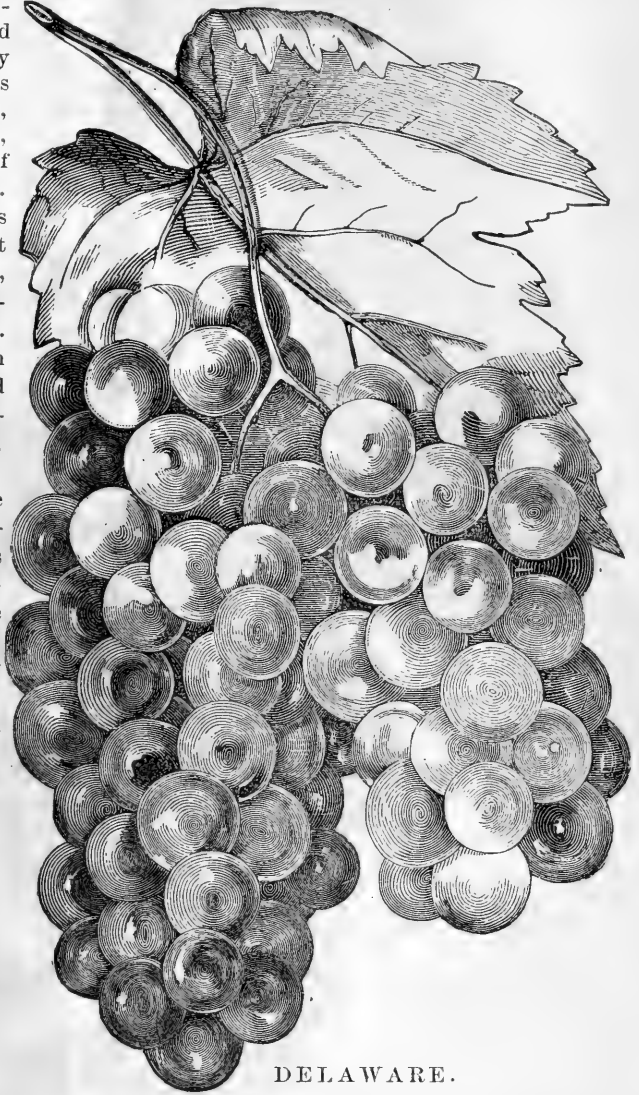
finer foreign sorts. *Vine* a moderate grower, with short jointed, firm wood; leaves of medium size, crimped, and sometimes rolled in. Its fruit ripens after the Concord, but before its parent the Diana. This variety has not yet been sufficiently tested for hardiness, and we may as well state that at least three independent parties are reputed to have made this hybrid, and there may exist several crosses of the foreign Black Hamburg on the Diana. Ours is from J. Charlton, Rochester, N. Y.

Delaware. Origin unknown; probably a Hybrid between the *V. Labrusca* and *Vitis Æstivalis*; first brought to notice by A. Thompson, Delaware Co., Ohio. This variety is considered to be one of the best, if not *the best*, of all American grapes, and is usually adopted as the standard of comparison for other American grapes. Unfortunately it does not, from various causes, succeed well in all localities; it should be planted *here* in deep, rich soil, on northeast and eastern slopes, and requires good cultivation. It is a slow grower. Some experiments have lately been made in grafting the Delaware on Concord and Clinton stocks, which proved very successful. The Delaware is exceedingly hardy, enduring the severest winters uninjured, when the vines are healthy. In some localities, however, it has been found subject to mildew, or leaf blight, and this tendency is greatly aggravated by allowing the vines to over-bear, which the Delaware is sure to do, if permitted. *Bunch* medium, compact; the clusters usually shouldered; *berries* below medium, round; skin thin, but tenacious; pulp sweet and tender; juice abundant, rich, vinous, sugary, sprightly and refreshing; color a beautiful purplish maroon, covered with a thin whitish bloom, and very translucent. Ripens early, about eight days later than Hartford Prolific. Quality best, for the table as well as for wine. *Must* 100°—118°.

"The must of this grape is generally so rich, and the proportions so evenly balanced, that it will make a first class wine, of great body and fine flavor, *without* manipulation or addition." —Husmann in *U. S. Report of Agriculture* for 1867.

Devereux. (*Æst.*) A Southern grape; belongs to the same class as Herbemont and Cunningham; where this grape will succeed it is one of our very best wine grapes, producing a white wine of exquisite flavor. It is somewhat subject to mildew, and requires covering in winter. North of Missouri it should not be tried, but here it succeeded admirably on southern slopes last season, and our Southern grape growers, especially, should plant some of it. *Bunch* very long, loose, shouldered; *berry* black, below medium, round; flesh juicy, without pulp, and vinous; quality best; *vine* a strong grower and very productive, when free from mildew.

Dracut Amber. Regarded by us as but a slightly improved wild fox grape; very early and productive. *Bunch* loose and long; *berries* oblong, medium, of pale red color, pulpy and foxy; too foxy for our taste, and should be discarded, when so many better varieties can be grown.



DELAWARE.

Elsinburgh. (Elsinboro.) Supposed to have originated in Elsinburgh, Salem county, N. J. An excellent amateur grape, of fine quality; ripens early. *Bunches* medium to large, rather loose, shouldered; *berries* small, skin thick, black, covered with a thin blue bloom; flesh without pulp, sweet, vinous. Leaves dark green, smooth; wood long jointed and slender. Subject to mildew.

Eumelan. ("Good black" grape.) (*Labr.*) This variety, now first introduced, was found as a chance seedling at Fishkill, N. Y., where it has been in cultivation (in the garden of Messrs. Thorne) for many years, yielding abundant crops of grapes, remarkable both for goodness and earliness. The original vines were purchased by Dr. C. W. Grant, and are now in the possession of his successors, Messrs. Hasbrouck & Bushnell, Iona Island, from whom we obtained the plants of this promising



THE EUMELAN GRAPE.

variety. As we can not speak of it as yet from our own experience, we give the description from the circular of its propagator, Dr. Grant, leaving out, however, all excessive praise, which, in our opinion, has damaged his success more than all his

opponents. *Bunches* of large size, elegant form, and proper degree of compactness; *berries* large, black, with fine bloom, adhering firmly to the bunch long after ripening; flesh tender, melting, all going to wine-like juice under slight pressure of



GOETHE (Rogers' Hybrid No. 1.)

the tongue; ripening very early (even before the Hartford Prolific) and evenly to the center. Flavor pure and refined, very sugary, rich and vinous, with a large degree of that refreshing quality that belongs distinctively to the best foreign black wine grapes. *Vine* a strong grower, producing remarkably short jointed wood; leaves large, thick, dark colored, firm in texture (it strikingly resembles Elsinburg), and gives promise of being a very hardy, healthy, early grape. The American Horticultural Annual for 1869, says of the Eumelan: This variety has been tested in several localities. It has proved with us, near New York, remarkably healthy in foliage. The Eumelan makes a superior red wine, and should it prove generally successful, it will rank high among wine grapes. We give on page 29 a figure of a bunch and leaf, natural size.

Essex. (Roger's No. 41.) *Bunch* of medium size, shouldered; *berry* large, black, somewhat flattened, in this respect resembling the native parent; flesh tender and sweet, with a high aromatic flavor; ripens early; *vine* vigorous, healthy, and prolific. Marshall P. Wilder says: This is, perhaps, the best in quality of all the black grapes.

Framingham. A new seedling, perhaps not identical with, but only a reproduction of the Hartford Prolific; at least so closely resembling it, that it should not have been introduced as a new variety.

Gaertner. (Roger's No. 14.) Not yet fruited here, and but little known. The Hon. Marshall P. Wilder describes it as follows: *Bunch* good size; *berry* medium to large; color light brown or red; skin thin; flavor pleasant and aromatic; season rather early; *vine* healthy and productive.—[*Grape Culturist* for June, 1869.]

Goethe. (Roger's No. 1.) This most valuable variety is, perhaps, more unique and shows in its fruit more of the character of the European species than any of Mr. Roger's other sorts, and yet its vine is one of the hardiest, healthiest, and most productive we have. Late in ripening for northern localities, it does not always mature there; but here with us it produces and perfectly ripens a large crop of beautiful clusters and berries, free from rot or imperfection of any kind. At the fall meeting of the Mississippi Valley Grape Growers' Association, September 9, 1868, we exhibited for the first time a few branches of the vine, each with several perfect clusters, which were much admired, and would have probably astonished even its originator, could he have seen them. The smallest of them, being a good average size, we had photographed and an exact copy of it expressly engraved for this catalogue. The *bunches* are medium to large, not quite compact, occasionally shouldered; *berries* very large, oblong, of a yellowish green, sometimes tinged with a pale red toward the sun; skin thin, translucent; flesh tender and melting throughout; few seeds, sweet, vinous, and juicy, with a peculiar

delicious aroma; excellent for the table and for wine. Specific gravity of *must* 78°; altogether a MOST DESIRABLE grape for our latitude.

Golden Clinton. (Synonym: King.) A seedling from the Clinton, closely resembling it, with that difference, that its berries are greenish white. We doubted that the plants we had under that name were true, and therefore did not send it out. We believe to have the true Golden Clinton now, and shall fruit it next season, when we shall know. Mr. Campbell says:

"I regret to say it does not sustain the character given by those who first introduced it. *Bunches* small, scanty, and irregular; *berries* small, and of inferior quality. Not desirable."

(But it may be that Mr. Campbell, like ourselves, did not have the true Golden Clinton. We shall see.)

Hartford Prolific. The standard for earliness among grapes. Raised by Mr. Steel, of Hartford, Connecticut, twenty years ago. It is now well known and generally planted as a very prolific early market variety; ripens here early in August. Though much better here than East, where it drops its fruit, it is still of poor quality; but the vine is very healthy and hardy, and produces immense crops. *Bunches* large, shouldered, rather compact; *berries* round, full medium, black; flesh pulpy, juicy, with a perceptible foxy flavor; tolerably fair wine has been made from it, but we could not recommend it for that purpose. Only as a market grape we consider it valuable, on account of its earliness and great productiveness; but even as such it is inferior to the Creveling.

Herbert. (Roger's No. 44.) *Bunch* rather long and loose; *berry* of large size, round, sometimes a little flattened; black; flesh very sweet and tender. Early and productive.

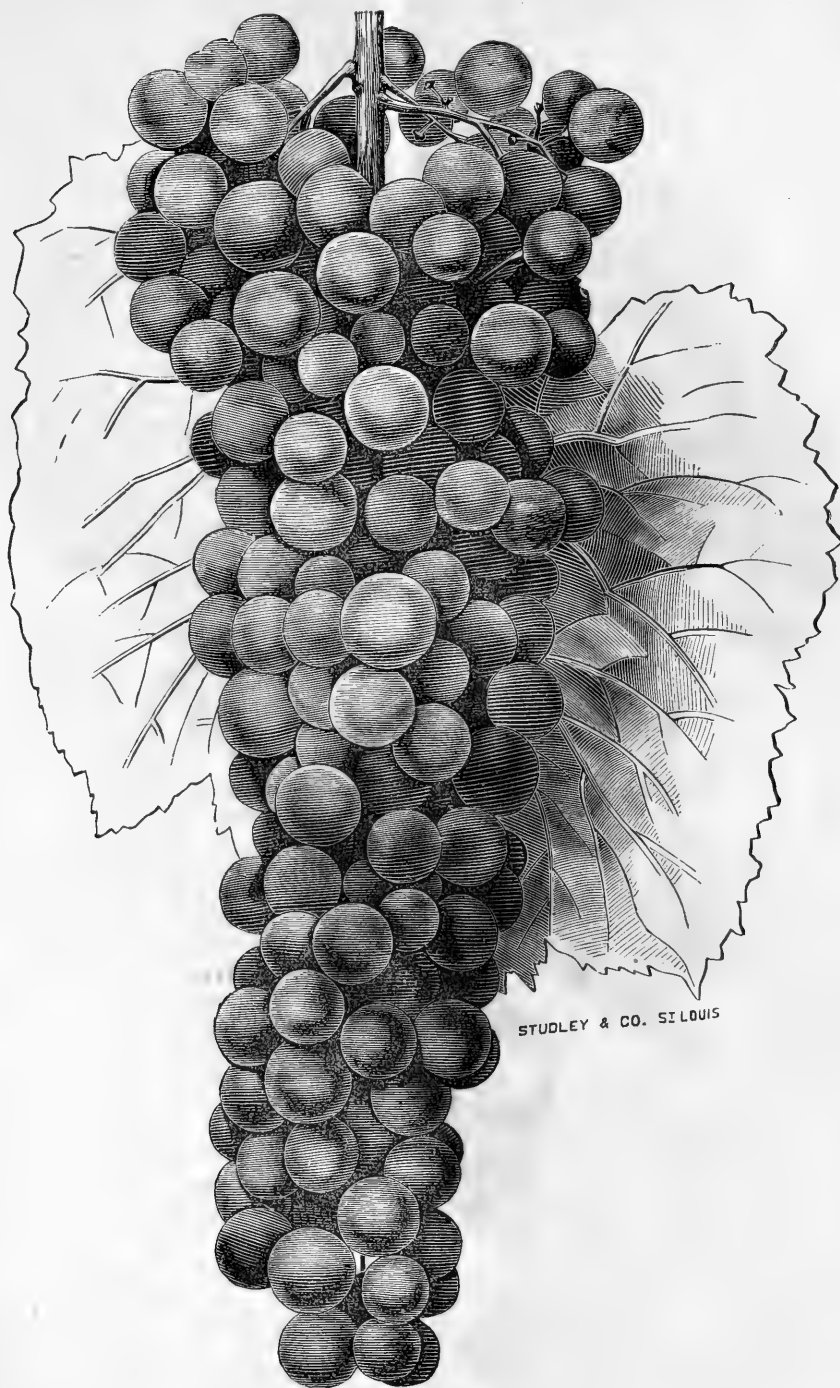
Herbemont. Origin unknown; it was propagated as early as 1798, from an old vine growing on the plantation of Judge Huger, Columbia, S. C. Mr. Nicholas Herbemont, an enterprising and enthusiastic cultivator of the grape, found it there, and from its vigorous growth and perfect acclimation, at first correctly supposed that it was a native; but he was afterwards informed that it had been received from France; he believed it. But the same grape was afterwards found growing wild in Warren county, Ga., and is there known as the Warren grape. The best authorities now class it as a member of the *Aestivalis* family of the South—a native grape, truly called by Dowding "Bags of Wine." One of the very best and most reliable grapes for both table and wine, especially adapted for our hillsides on limestone soil. It should not be planted largely further north, and even here should be covered in winter. For those who have gone to this slight trouble it has always produced a splendid crop, and has been so enormously productive that



THE HERBEMONT GRAPE.

it richly repaid the little additional labor. To our Southern States this grape will be a mine of wealth. *Bunches* very large, long, shouldered and compact; *berries* small, black, with a beautiful blue bloom; skin thin; flesh sweet, without pulp, juicy and high flavored; ripens late, about same time as Catawba. *Vine* a very vigorous grower, with the most beautiful foliage; not subject to mildew, and but very little to rot; in rich soil it is somewhat tender, makes too much wood, and seems less productive, while in warm and rather poor limestone soil, with southern exposure, it is perfectly healthy and enor-

mously productive. Mr. Werth, of Richmond, Va., says: I have found the most uniformly abundant, healthy, and thoroughly ripened crop, for successive seasons, on low, imperfectly drained, and rather compact soil. The above figure gives an idea of the beauty and richness of this bunch. Specific gravity of *must* about 90°. The pure juice pressed, without mashing the grapes, makes a white wine resembling delicate Rhenish wines; if fermented on the husks about forty-eight hours, it will make a very fine red wine, somewhat resembling Madeira.



THE HERMANN GRAPE.

Hermann. This new wine grape is a seedling of Norton's Virginia, raised by Mr. F. Langendoerfer, near Hermann, Mo., who gave us a few hundred buds for propagation. After giving to the originator his share, and keeping a few for planting ourselves, we offer the small number yet remain-

ing at a comparatively very low price to those who desire to test this new, remarkable variety. Its engraving and description we copy from Mr. Husmann's *Grape Culturist*.

The original vine had fruited in 1863 with Mr. Langendoerfer, and grafts of it fruited abundantly

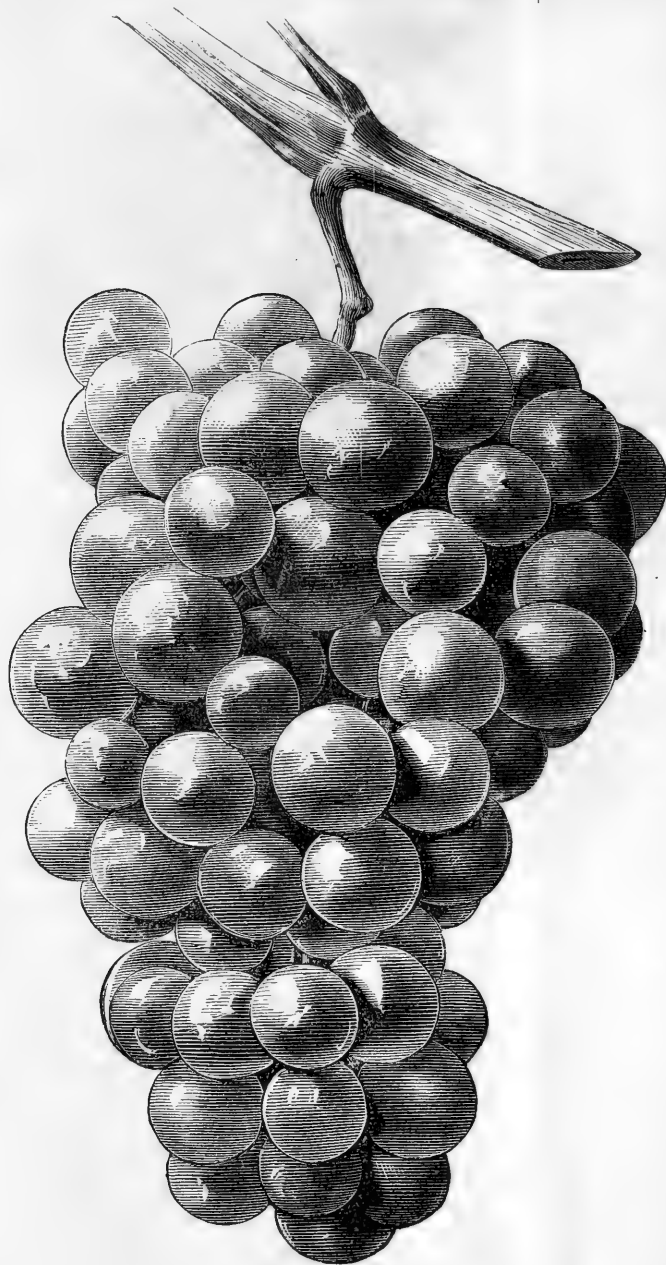
in 1864. On trying the must on Oechsle's scale it showed 96°, and has since varied from 94° to 105°. *Bunch* long and narrow, seldom shouldered, compact, often nine inches long; the shoulders, if there are any, having the appearance of a separate bunch; *berry* small, about same size as Norton's, round, black with blue bloom, moderately juicy, never rots or mildews, and ripens about the same time as the Norton's, or a few days later; the juice is not dark red, but brownish yellow, making a wine also of the color of brown Sherry or Madeira, of great body and of very fine flavor, resembling

Madeira. *Vine* a strong grower and very productive, resembling the Norton in foliage, but the leaves are of a lighter color, the stems covered with peculiar silvery white hairlike threads, and the leaves somewhat more deeply lobed. It is, like its parent, very difficult to propagate, and will rarely grow from cuttings in the open ground. We have watched this grape closely and with particular interest, and have become firmly convinced that it is an important addition to our list of *wine grapes*. If productiveness, general hardihood and health, and a superior wine can entitle a new variety to consideration, this variety certainly deserves it at the hands of our vintners. Its wine is entirely different and distinct from anything else we have, and which we hope will be the *American Madeira*, so anxiously sought by our *connoisseurs*. At the trial of wines at Hermann, Mo., held on the 17th of May, 1869, the "Hermann" attracted general attention. An extra premium was awarded to it.

Let not our readers suppose that it will be a *universal* grape, however. For our locality, and farther south, we think it will be eminently desirable, but much further north it will hardly attain the perfection requisite to make a really superior wine, as it ripens rather late. It will, we think, be found specially adapted to southern slopes and limestone soil, though it seems to have all, or even more, of the hardihood of its parent. It is a true *æstivalis* in leaf and habit.

Hine. A new seedling of the Catawba, raised by Jason Brown (son of John Brown) at Put-in-Bay, Ohio. It makes a good-sized, compact, slightly shouldered bunch; *berry* medium, of a dark rich claret brown, with a purplish bloom; skin of medium thickness; flesh juicy, sweet and almost without pulp; leaf large, thick and whitish underneath; canes reddish brown, short-jointed; buds prominent; ripens with the Delaware. Justly regarded by all who have seen it as a grape of much promise. It took the first premium as the best new seedling at the last Ohio State Fair. We give an engraving figured from a bunch raised by Chas. Carpenter, Kelley's Island. Mr. M. H. Lewis favored us with a vine of this new variety last fall.

As this new grape has not yet been tested in different localities, we cannot yet recommend it, except as an interesting novelty to amateurs; and its being supposed to be a cross between



THE HINE GRAPE.

the Catawba and Isabella gives us but little confidence in its health.

Huntingdon. (*Cord.*) A new grape. *Bunch* small, compact, shouldered; *berry* small, round, black, juicy and vinous. *Ripens early.* *Vine* a vigorous grower, healthy, hardy and immensely productive; promises well for wine.

Iona. Originated by Dr. C. W. Grant, of Iona Island, near Peekskill, N. Y. It is a seedling of the Catawba, and the leaf somewhat resembles that variety. Wood short-jointed. *Vine* a strong grower. Here it is subject to mildew and rot, and requires careful protection in winter.

The Iona is a fine grape for the garden, and suited only to specially sheltered and protected localities. Wherever it will succeed, it is a most desirable variety.

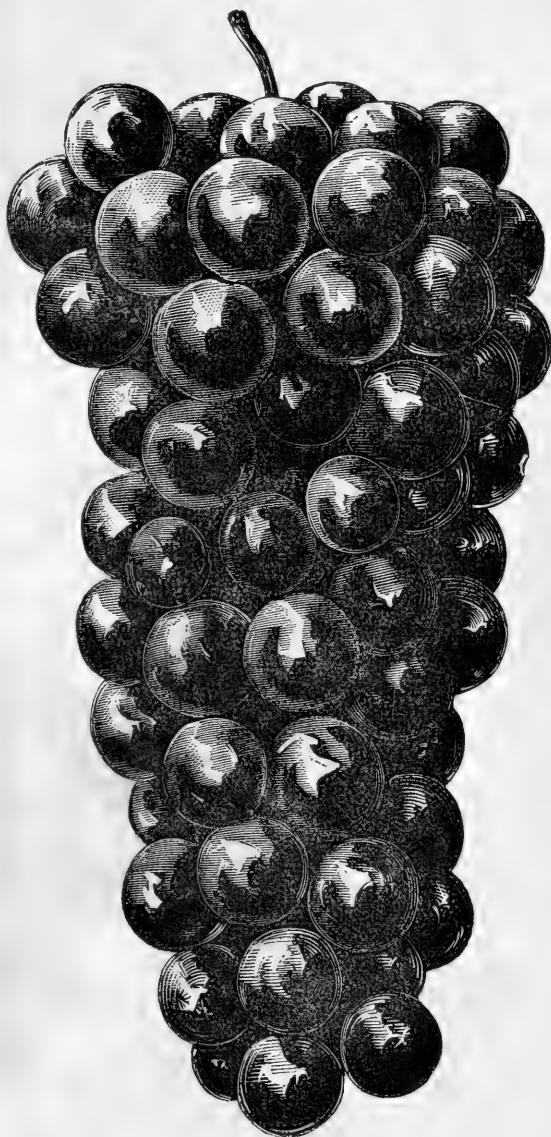
Bunch usually large, long and shouldered, not very compact; *berries* medium to large, slightly oval; skin thin, but tenacious; pale red, with numerous deep red veins, which become quite dark when fully ripe. *Flesh* tender, with uniform character and consistence to the center. *Flavor* rich, sweet, vinous; quality best—nearly equaling the Delaware. Magnificent specimens were grown in a cold-house, by Mr. Saunders, at the Experimental Gardens at Washington. *Must* 88° to 92°; and some recorded as high as 101°; *acid* 8.6-10.

Israella. Originated by Dr. C. W. Grant, who claimed for it that it was "the earliest good grape in cultivation;" but now even he himself admits that it is not as good as his "Eumelan." With us it proved later and inferior in quality to Hartford Prolific. The Israella is probably a seedling of the Isabella, which it resembles in habit of growth and character of fruit. *Must* (said to have reached) 84°, with only $5\frac{1}{2}$ *acid*.

Isabella. Probably a native of South Carolina or Georgia. Very liable to mildew, rot and leaf-blight. It has, justly we think, been entirely discarded by our grape growers, since better and more reliable varieties have taken its place. *Bunches* large, loose, shouldered; *berries* oval, large, dark purple, nearly black when fully ripe, and covered with a blue-black bloom. *Flesh* juicy, with a rich musky aroma; tough pulp, and a good deal of acidity. *Ripens* irregularly, and the leaves seem to fall just at the time they are needed to aid in ripening the fruit.

In some localities it is still a favorite market grape. *Must*, at Hammondsport, 60° to 72°; *acid*, $12\frac{1}{4}$.

Ives' Seedling. (*Ives' Madeira*, Kittredge.) (*Lab.*) Produced by Henry Ives, of Cincinnati; (probably from the seed of a Hartford Prolific; certainly not from a foreign grape, as Mr. Ives supposed.) Colonel Waring and Dr. Kittredge were the first to make *wine* from it—about six years ago—and now it is the favorite red wine in Ohio. While we do not deem it entitled to the first prize "as the best wine-grape for the whole country" (awarded to the Ives at Cincinnati, Sept.



THE IVES GRAPE.

24th, 1868), we do accord to it the great merit of having given a new impulse to grape growing in Ohio, at a time when the repeated failures of the Catawba Vineyards made it most desirable.

Bunches medium to large, compact, often shouldered; *berries* medium, slightly oblong, of a dark purple color; when fully ripe, quite black. *Flesh* sweet and juicy, but decidedly foxy, and rather pulpy. Not desirable as a table grape.

It colors very early, but its period of ripening is later than the Concord. The *vine* is remarkably healthy and hardy; a strong, coarse grower, in general habit and appearance closely resembling the Hartford Prolific, but less productive; at least, it does not seem to be an *early* bearer, four-

year old vines of this variety producing the first crop. It is said, however, to bear profusely when older. *Must* 80°.

Katarka. A new variety (probably a seedling from a Hungarian grape) which we received from Newburgh, Orange county, N. Y. Dr. W. A. Royce describes it as follows:

“Midseason to late; nearly black, very large pulpless *berry*; heavy *bunches*, broadly shouldered and long; good dessert and wine; immensely prolific; needs winter covering here; endures winter uncovered in Virginia; very free grower; good keeper; ripens successively.”

Lenoir. A Southern grape of the Herbemont class. *Bunch* medium, compact; *berries* small, round, dark-bluish purple, nearly black, covered with light bloom. Flesh tender, without pulp, juicy, sweet and vinous. A good early grape, which, in favorable localities, will be found desirable for wine and table. *Vine* a fine grower, but a tardy bearer

Lindley (Roger's No. 9). This grape originated by hybridizing the wild Mammoth grape of New England with the Golden Chasselas. *Bunch* long, medium, shouldered, somewhat loose; *berries* medium to large, round; color like the Catawba. Flesh tender, sweet, with scarcely a trace of pulp, and of high aromatic flavor. It resembles the Grizzly Frontignac in appearance of bunch, and is by some regarded as nearly equal to the Delaware in quality. *Vine* of very vigorous growth, making rather long-jointed wood. The foliage when young is of a reddish color. It ripens early, and makes a splendid white wine. Specific gravity of *must*, 80°.

To those desiring a substitute for the Catawba, this will be an acquisition.—*Husmann*.

Logan. (*Labr.*) A wildling of Ohio. On its introduction, supposed to be a great acquisition, and recommended by the Am. Pomological Society as promising well. But it has sadly failed to meet public expectation, and is now more generally discarded than the Isabella, to which it was deemed preferable. *Bunches* medium, shouldered, compact; *berries* large, oval. Flesh juicy, pulpy, insipid in flavor. *Vine* a slender grower; early and productive.

Louisiana. Introduced here by that eminent pioneer of Western grape culture, Fred. Münch, of Missouri. He received it from Mr. Theard, of New Orleans, who asserts that it had been imported from France by his father, and planted on the banks of Pontchartrain, near New Orleans, where it has for thirty years yielded abundant and luscious fruit. Mr. Münch firmly believes that it is of European origin, and belongs to the Burgundy family. Mr. Fr. Hecker is just as positive that it is European, but deems it nothing else but the Clavner grape of his native country—the Grand Duchy of Baden. Mr. Husmann, on the other hand, holds that it is a true native American, belonging to the southern division of the *Æstivalis*

class, of which the Herbemont and Cunningham may serve as types. All agree, however, that it is a valuable grape, making a very fine wine.

Bunch medium size, shouldered, compact, very fine; *berry* small, round, black. Flesh without pulp, juicy, sweet and vinous; quality *best*. *Vine* a very good grower, very healthy and more or less productive, according to position and treatment; requires winter protection.

The *Louisiana* and *Rulander* (or, rather, what we call *here* *Rulander*) so closely resemble each other in general appearance, growth and foliage, that we are unable to distinguish them, except by their fruit, which ripens in both varieties at the same time (very late). Both are undoubtedly nearly related to each other; but there is a great difference in the juice—the wine of these two varieties.

With our friend Münch, the *Louisiana* proves to be much more productive, and yields nicer and more delicious fruit than the *Rulander*. With our friend Husmann, the *Rulander* proved more productive.

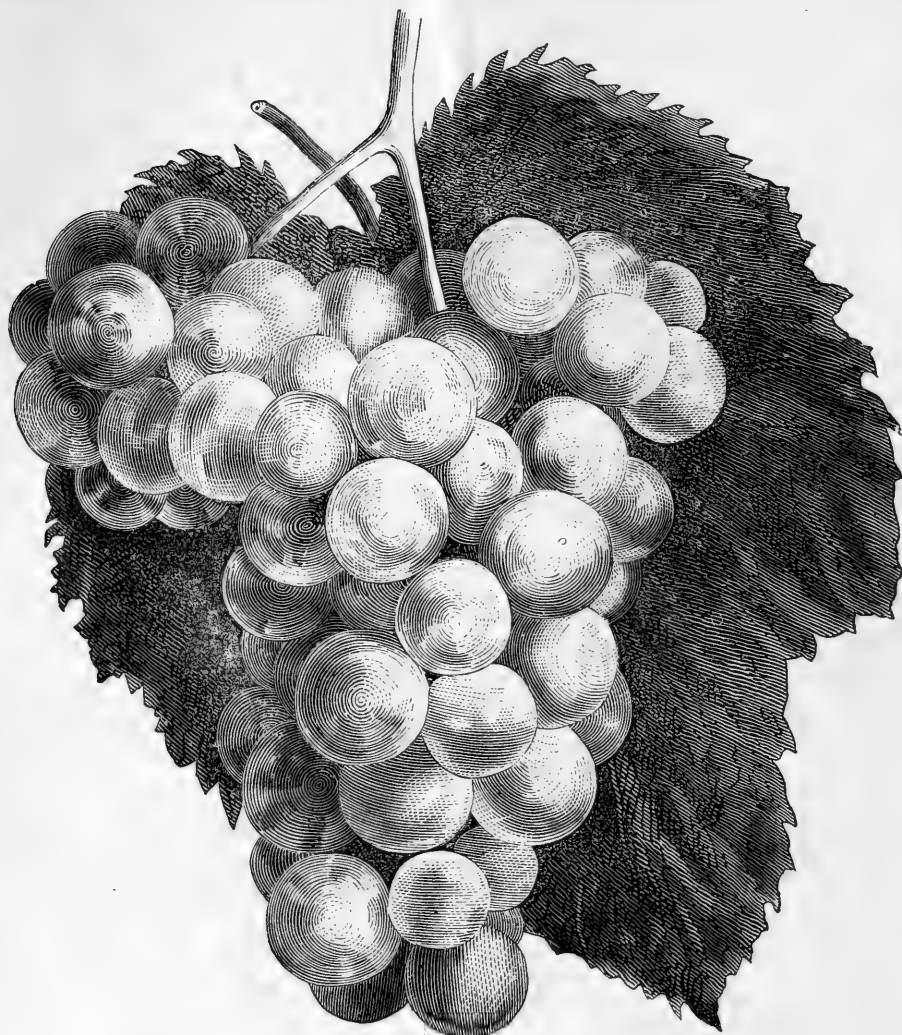
Lydia. Originated by Mr. Carpenter, of Keller's Island, Lake Erie. Supposed to be an Isabella seedling. *Bunches* large; *berries* large, oval, light green, with salmon tint where exposed to the sun. Skin thick; pulp tender, sweet, of fine flavor, slightly vinous. In habit of growth, the *vine* is not unlike the Isabella, but is much less productive. A handsome grape, of good quality, but mildews some in unfavorable seasons. Ripens a few days later than the Delaware.

Main-Grape. This was sent out as a new variety, quite equal to the Concord, but *earlier* and better in quality. We paid a high price for it, to find—that it was a Concord, and nothing else. The original vine was grown on the south side of a wall, and consequently its fruit ripened about ten days earlier than other Concords in the vineyard near by; and thus Mr. Main honestly believed that he possessed a new variety! Wonder whether he will now honestly return us and others thus imposed upon the money he obtained?

Marion. A new variety, brought to us from Pennsylvania by that indefatigable horticulturist, Samuel Miller; promises to be valuable. *Bunch* large, compact; *berry* medium, round, black, juicy. Not sufficiently tested to be recommended.

Mary Ann. (*Lab.*) Resembling the Isabella. Very early, ripening a few days before the Hartford Prolific, and therefore valuable as an early market grape, though of inferior quality.

Martha. A white seedling of the Concord, raised by our friend Samuel Miller, formerly of Lebanon, Pa., now of Bluffton, Mo. *The most popular among the NEW varieties.* *Bunch* medium, smaller than the Concord, moderately compact, shouldered; *berry* medium, round, greenish white, sometimes with an amber tinge; when fully ripe pale yellow, covered with white bloom. Skin thin. Flesh very buttery, and of a remarkable sweetness,



THE MARTHA GRAPE.

unmixed with acidity, and without vinous flavor; somewhat pulpy, often containing but a single seed. Odor decidedly foxy, but this character is much less manifest in the taste, and yet much more apparent in the fruit than in its wine.

The *vine* is very healthy and hardy, resembling the Concord, but not quite as vigorous a grower, and the leaf is of a somewhat lighter green; very productive, and the berries hang well to the bunch. Ripens a few days earlier than the Concord, and will therefore suit even northern localities. *Must* 85° to 92°; at least 10° higher than Concord.

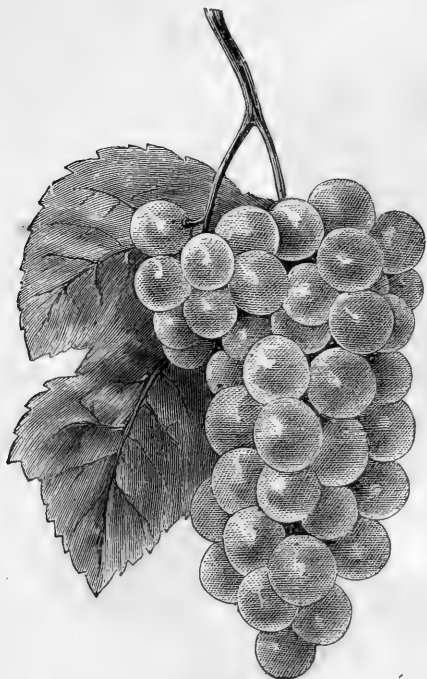
The wine is of a light straw color, of delicate flavor. Mr. Husmann mixed some of its must with the Maxatawney, in equal parts, and made thus one of the best American white wines we ever tasted.

Massasoit (Roger's Hybrid No. 3). Not yet

fruited here. We copy the following description by Mr. Wilder, our celebrated veteran of American pomology, from the *Grape Culturist*:

Bunch rather short, medium size, shouldered; *berry* medium size; color brownish red. Flesh tender and sweet, with a little of the native flavor when fully ripe. Season same as the Hartford Prolific. Very free from disease, and sufficiently vigorous.

Maxatawney. A chance seedling, originated in Montgomery county, Pennsylvania. First brought into notice in 1858. *Our favorite white grape.* *Bunch* medium, long, compact, usually not shouldered; *berry* above medium, oblong, pale yellow, with slight amber tint on the sunny side. Flesh tender, not pulpy, sweet and delicious, with fine aroma, few seeds; quality best, both for table and wine. Ripens rather late for northern localities, but where it fully ripens, as here in Missouri, it is



MAXATAWNEY (half diameter).

one of the finest of our native white grapes, much like the European white Chasselas.

Vine very healthy and hardy; needs no protection in winter; foliage large, deeply indented, quite free from disease. *Must* 82°.

Will make a very delicate white wine, without galling. — *Husmann*.

Merrimack (Roger's No. 19). Regarded by some as the finest grape in the collection of R.'s hybrids. Mr. Wilder says:

It is one of the most reliable varieties in all seasons. *Vine* very vigorous, free from disease; *bunch* usually smaller than his other black sorts; *berry* large, sweet, tolerably rich. Season about the 20th of September (in Massachusetts.)

We prefer his No. 4, the "Wilder;" it is like it in quality, with by far larger and heavier bunches, and more profitable.

Miner's Seedling. (See *Venango*.)

Miles. A grape of recent introduction that promises to be well worthy of attention; not yet fruited with us. We copy its description from Mr. Geo. W. Campbell, of Delaware, O., one of our most competent and reliable grape growers and propagators:

The *vine* is a good, healthy, strong grower, and the fruit very early, and of good quality and flavor. It is a black grape, compact in *bunch*, and of medium size in both *bunch* and *berry*. In flavor sprightly, sweet and vinous; pulp soft; quality good. Will probably be found very valuable for early market, as also for the table, and for wine. Ripeus last of August.

Would ripen *here* two weeks earlier.

Montgomery. Probably a seedling of a foreign grape. We cannot, as yet, speak of its adaptability to our climate. Dr. W. A. Royce, of Newburgh, N. Y., describes it as a fine grower, a superlative white dessert grape. *Bunch* and *berry* superb; 1 to 2 lbs. weight; keeps well through winter; needs thin, warm, dry soil, and winter protection.

Mottled. Originated with Mr. Charles Carpenter, Kelley's Island. A seedling of the Catawba. Earlier in ripening, and less disposed to mildew and rot than its parent. Our esteemed friend M. H. Lewis, of Sandusky, Ohio, says:

"This variety undoubtedly deserves more credit than it has gained, at home and abroad."

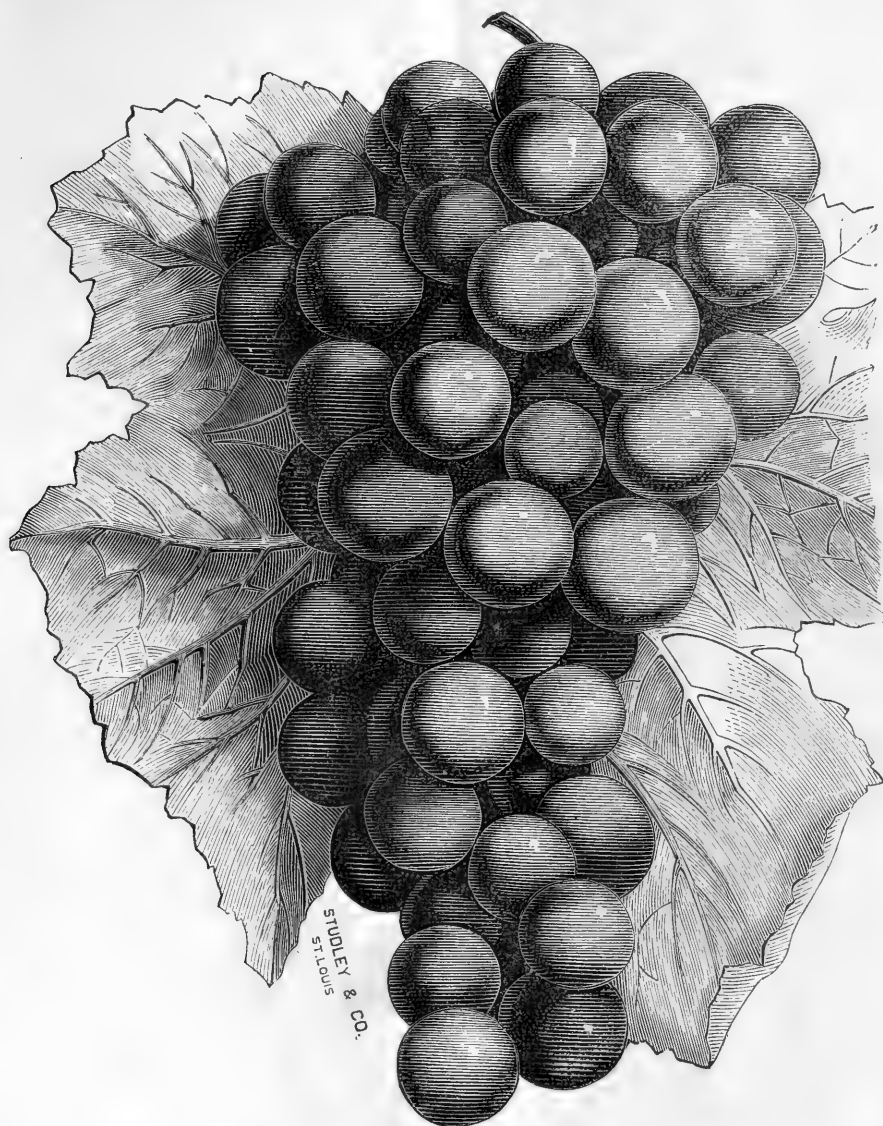
And those of our grape growers who seem disposed to plant again the Catawba, we would advise to give this, her daughter, a fair trial.

Bunch medium size, very compact, slightly shouldered; *berries* medium to large, round, distinctly mottled with different shades of red or maroon while ripening, but nearly a uniform dark Catawba color when fully ripe, with a slight bloom. Flesh sweet, vinous, always rather pulpy and acid at the center. Skin thick. More desirable as a wine than a table grape. *Vines* healthy, hardy and very productive on old, established vines; moderately vigorous; foliage abundant; wood short-jointed. It was recorded by three competent judges, Mr. Geo. Leick being one, that its *must*, a year since, weighed 94°, with *acid* 4°.

Mount Lebanon. Originated by George Curtis, of the United Society of Mount Lebanon, Columbia county, N. Y.; supposed to be a cross of Spanish Amber and Isabella. *Not yet tried here.* We received it for testing and propagation of Mr. J. H. Foster, Camden Co., N. J., who recommends it as an early and hardy grape, and thinks that it will rank highly for vineyard and garden culture.

Northern Muscadine. (*Lab.*) A seedling raised by the Shakers of New Lebanon, N. Y. Opinions differ widely about its value. Father Münch, as we call our venerable friend, the Hon. Frederick Münch, places it as a table grape next to the Diana and Venango, and as a wine grape far above them. *Bunch* medium, very compact, almost round; *berry* medium to large, amber-colored, flesh pulpy and foxy, sweet, skin thick. *Berries* apt to drop from the bunch when ripe. Ripens early, about two weeks before Catawba. *Vine* of luxuriant growth, hardy and productive, free from rot. Its *must* will probably be found valuable to mix with some other variety, to which it would impart, we believe, a fine Muscat flavor.

North Carolina. (*Lab.*) This seedling originated with that veteran pomologist, J. B. Garber, of Columbia, Pa.; belongs to the Isabella type, and is a good market grape of fair quality. *Bunch* medium to large, occasionally shouldered, moderately compact, very showy. *Berries* large, oval,



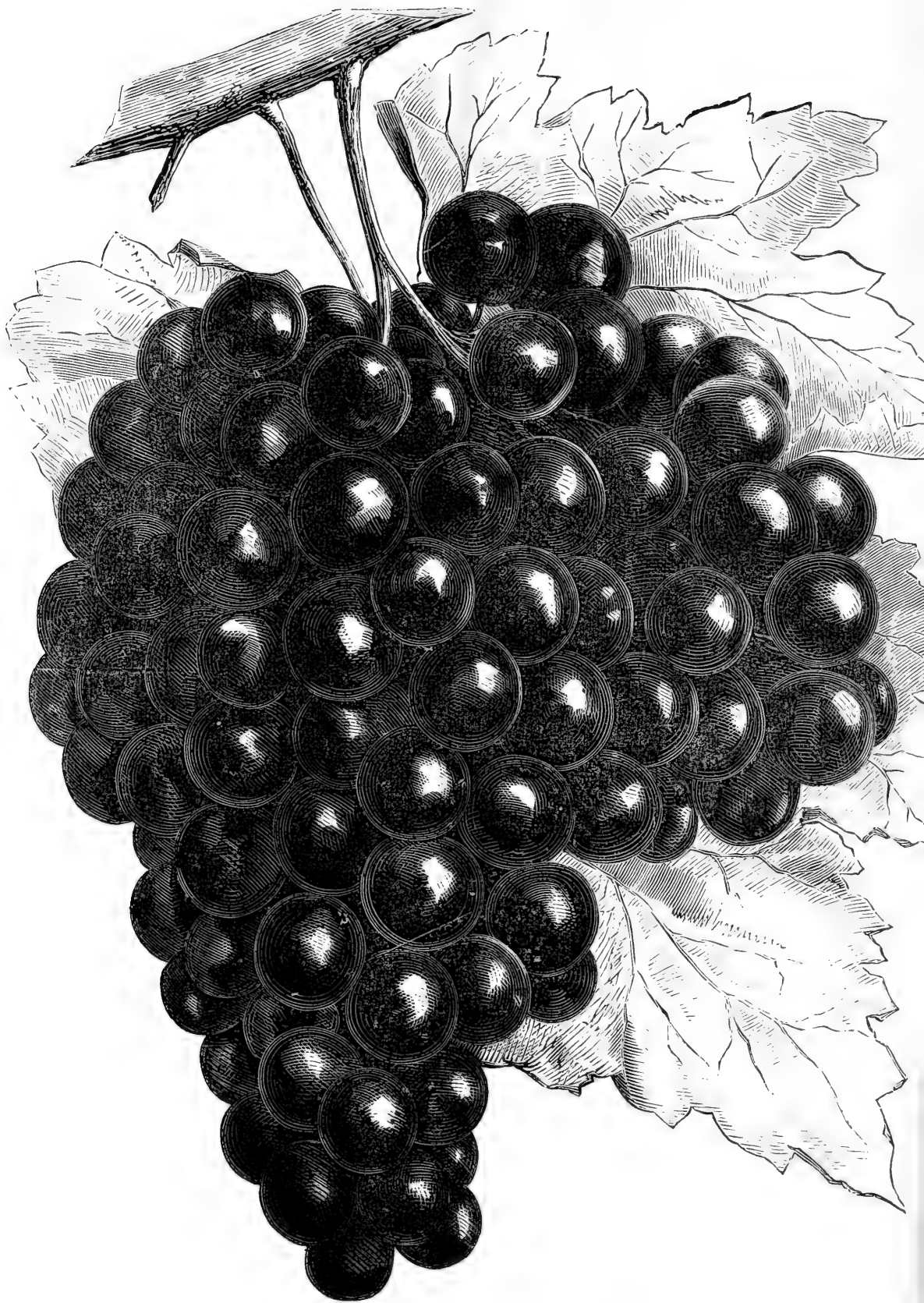
THE NORTH CAROLINA SEEDLING.

black with slight blue bloom; flesh pulpy but sweet; skin thick; hangs well to the bunch, will keep well and carry to market in good condition. Ripens early, coloring a few days before the Concord. *Vine* an enormous grower, hardy, healthy and very productive; requires long pruning and "plenty to do." The initiated can also make a good muscatell wine of it. *Must*, 84°.

Norton, or Norton's Virginia. Originated from seed of a wild grape (from the forests in Hanover county, Virginia) in the garden of Dr. D. N. Norton, an amateur horticulturist near Richmond, Va., and was introduced by him to public notice about forty years ago. It made but little progress, until about twenty years ago, when Mr. Heinrichs and Dr. Kehr brought it, each a few sprigs, to our

Hermann vine-dressers. This little insignificant looking grape, pronounced worthless by Mr. Longworth, the father of American grape culture, and really not very suitable for Pennsylvania, New York, Ohio, etc., has become the great and leading variety for red wine, not merely in Missouri, where its superior qualities were first appreciated and brought out in full splendor, and in its native State, but far and near wherever grape vines are planted; and it is now so popular that it will be difficult to make our grape growers believe a variety still superior to the Norton can be found. And yet we claim this for the "*Cynthiana*."

The *bunch* of the Norton is long, compact and shouldered; *berry* small, black, with dark bluish red juice, almost without pulp when fully ripe;



OTHELLO (Arnold's Hybrid No. 1.)

sweet and brisk. Ripens late, in October. *Vine* vigorous, healthy, hardy and productive when well established, but very impatient of transplanting and exceedingly difficult to propagate. Wherever the season will admit of a thorough and perfect ripening of its fruit, the Norton will succeed in almost any soil. In rich bottoms it comes early into bearing, and is enormously productive—on high hills with rather poor soil and southern aspects it is tardy in coming into bearing, but produces there the richest wine, of great body and superior medicinal qualities.* It has quite a peculiar coffee flavor, which at first seems unpleasant to many, but which, like coffee, endears itself to our taste. *Must*, 115°.

Oporto. Of the same species as the Taylor's Bullit; a true native with a foreign name. *Bunches* usually very imperfect; *berries* small, black, harsh and very acid; considered a very poor variety by Mr. Fuller. "Of no value, a complete humbug."—*Husmann*.

Ontario. Closely resembling and most probably identical with Union Village.

Onondaga. A seedling, originated in Fayetteville, Onondaga Co., N. Y.; a cross between the Diana and the Delaware; said to combine in some degree the flavor of both. Its appearance is certainly very fine, resembling Diana. Should it prove here as good and healthy as its originator claims, it would indeed be a valuable acquisition.

Othello (Arnold's Hybrid No. 1.) A cross from what is called Clinton in Canada (but not the true Clinton) fertilized by the pollen of Black Hamburg. Described in the *Am. Hort. Annual* for 1868, as follows: "*Bunch* and *berry* very large, much resembling the Black Hamburg in appearance. Black with a fine bloom. Skin thin, the flesh very solid, but not pulpy; flavor pure and sprightly, but in the specimens we have seen rather acid. Ripening with the Delaware."

There is no doubt that this as well as the other Hybrids of Mr. Arnold will prove much better in quality in our more congenial climate and soil, and having stood the exposure to which they were subject there (in Canada) may with safety be recommended as hardy and healthy.

Pauline. A Southern black grape, of the same family as the Lenoir and Alvey. Said to be superior for both wine and the table. (There is also a pale amber grape cultivated at the South under the same name). Mr. G. W. Campbell, of Delaware, O., says: "It is a very strong grower; healthy and hardy as Lenoir, which it somewhat resembles; it is, however, later in ripening and usually overtaken by frosts here (in Northern Ohio) before ripe." Not yet fruited here.

Perkins. (*Lab.*) The true Perkins, as we have it, is a valuable, very early market grape. *Bunch* large, shouldered, compact; *berries* medium, oblong, often flattened by their compactness, of a fine, pale lilac color when fully ripe, with a thin

white bloom; flesh sweet, juicy, but somewhat foxy, skin thick; ripens a few days after Hartford Prolific and before Delaware. *Vine* a vigorous grower, healthy and productive.

Rebecca. (*Labr.*) An accidental seedling, found in the garden of E. M. Peake, of Hudson, N. Y. It is one of our finest white grapes, but unfortunately very tender in winter, subject to mildew, of weak growth, deficient foliage and not productive. On south walls, in well protected situations, with dry soil and good culture, it succeeded however very well and produced most delicious white grapes. *Bunches* medium, compact, not shouldered; *berries* medium, obovate, skin thin, pale green, tinged with yellow or pale amber color at full maturity, covered with a thin white bloom; flesh tender, juicy, free from pulp, sweet with a peculiar musky and luscious aroma, distinct from any other grape; seeds small; leaves of scarcely medium size, very deeply lobed and sharply serrated. Suited only to amateur culture.

Rentz. A Cincinnati seedling, produced by the late Sebastian Rentz, a most successful vigner. Claimed to be equal, if not superior to Ives. A large, rather coarse black grape, very vigorous and healthy in vine and foliage, and very productive. *Bunch* large, compact, often shouldered; *berry* large, round, black; flesh rather pulpy and musky, with abundant sweet juice. Ripens earlier than Ives seedling, and is said to make a fine red wine; may prove successful for this purpose, but is too pulpy for a table grape. Not sufficiently tested to be recommended.

Requa (Roger's No. 28). Not yet fruited here; but Mr. Wilder, who had a better opportunity than most men to form an accurate opinion of the merits of these hybrids, and is without doubt the most reliable source, describes it in the *Grape Culturist* (June 1869) as follows:

"*Vine* tolerably vigorous, and quite productive; *bunch* large, shouldered; *berry* medium size, roundish; skin thin; flesh tender and sweet, with a trace of the native flavor; color bronzy green, assuming a dull brown red at maturity; season middle of September. A grape of fine quality, but subject to rot in unfavorable seasons."

Rulander, or Ste. Genevieve. What we call here the Rulander is not precisely the same vine known by that name in the neighborhood of Mentz, Germany, but is claimed to be either a foreign variety or a seedling from such foreign grape brought by the early French settlers to the Western bank of the lower Mississippi (Ste. Genevieve). Mr. Husmann, however, believes it to be a native belonging to the southern division of the *Æstivalis* class, entirely different in foliage, wood and fruit from all the varieties belonging to the *Vitis Vinifera* class. Be this as it may, it certainly is one of our most valuable wine grapes. *Bunch* rather small, very compact, shouldered; *berry* small, black, without pulp, juicy, sweet and delicious; not subject

*It is the great remedy here for dysentery and diseases of the bowels.

to rot or mildew. *Vine* a strong, vigorous, short jointed grower, with heart-shaped, light green, smooth leaves, hanging on till late in November; very healthy and hardy, but requires covering in winter. And although it will not bear *big* crops, it makes up in quality as a wine grape what it may lack in quantity. It makes an excellent pale red or rather brownish wine, closely resembling sherry, which was repeatedly awarded a first premium as the best light colored wine. *Must*, 100°—110°.

Roger's Hybrids. Those of Mr. Roger's valuable seedlings to whom he has given names in place of numbers, by which they have hitherto been designated, have been placed, in alphabetical order, in their appropriate places*; but there are some remaining numbers yet unnamed, which certainly deserve a name. By naming them he would also put an end to the many mistakes which have been made and which, we fear, will now become still more numerous, from having both numbered and named varieties.

No. 2. One of the largest of all his Hybrids. *Bunch* and *berry* very large; dark purple, nearly black; late in ripening, and in flavor somewhat like the Catawba. *Vine* a vigorous grower and very productive. Seems to be also promising for wine.

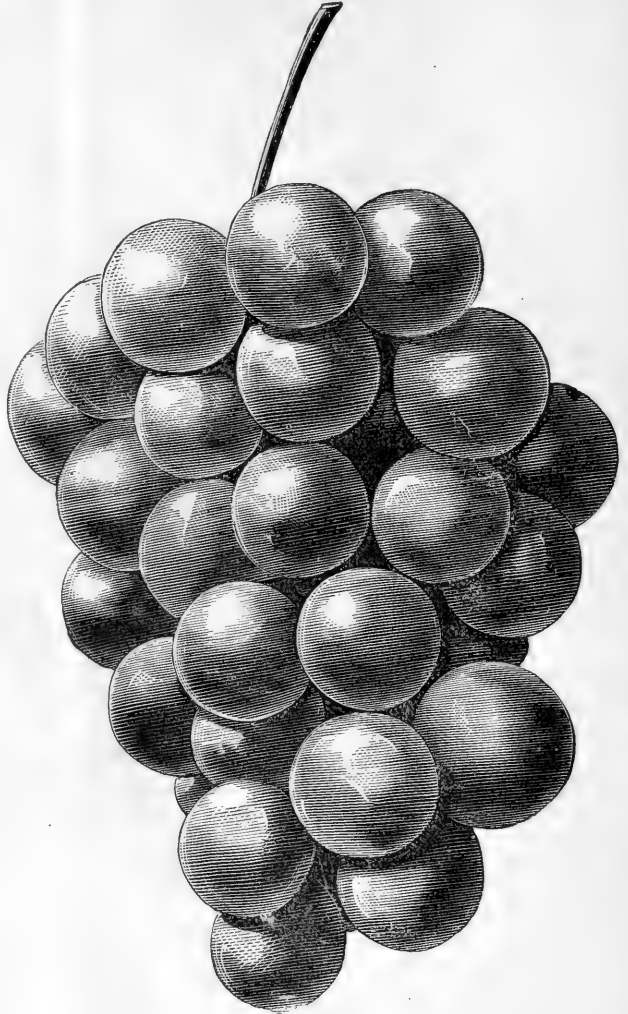
No. 5. Not yet fruited here. Mr. Geo. W. Campbell says:

"One of the finest of Rogers' Hybrids, and deserving to be better known. *Bunch* medium to large, moderately compact; *berries* large, round, red; sweet and rich; free from foxiness and in quality one of the very best. *Vine* perfectly hardy and healthy, but not as strong a grower as some others."

No. 8. Considered by Mr. Husmann as one of the *best*, and especially valuable for wine making purposes. *Bunch* and *berry* large, color pale red, but the fully matured berries a deep coppery red with fine light gray bloom; flesh sweet, juicy, with pleasant flavor and almost entirely free from pulp. Skin about the same thickness as Catawba, but has less of the astringency or harshness of that variety. *Vine* a strong, vigorous grower, with broad, thick and coarse foliage. Very hardy and productive.

Salem (Rogers' No. 53.) Like Agawam (No. 15) and Wilder (No. 4) this is a hybrid between a native and the Black Hamburg. *Bunch* large and compact, broad, shouldered; *berry* large as Hamburg, of a light chestnut or catawba color; flesh tolerably tender, sweet, with rich, aromatic flavor;

considered in quality one of the best; ripens as early as Delaware; it also keeps well. *Vine* very vigorous, healthy; wood of a lighter color than most of the Rogers grapes. In 1868 it was awarded the first premium at the fair of the Lake Shore Grape Growers' Association. It is well worthy of extended trial in our vineyards, and will probably prove valuable for wine, besides being a very attractive and excellent table grape. Mr. T. L. Harris, of Brockton, N. Y., planted 30 acres vineyard of



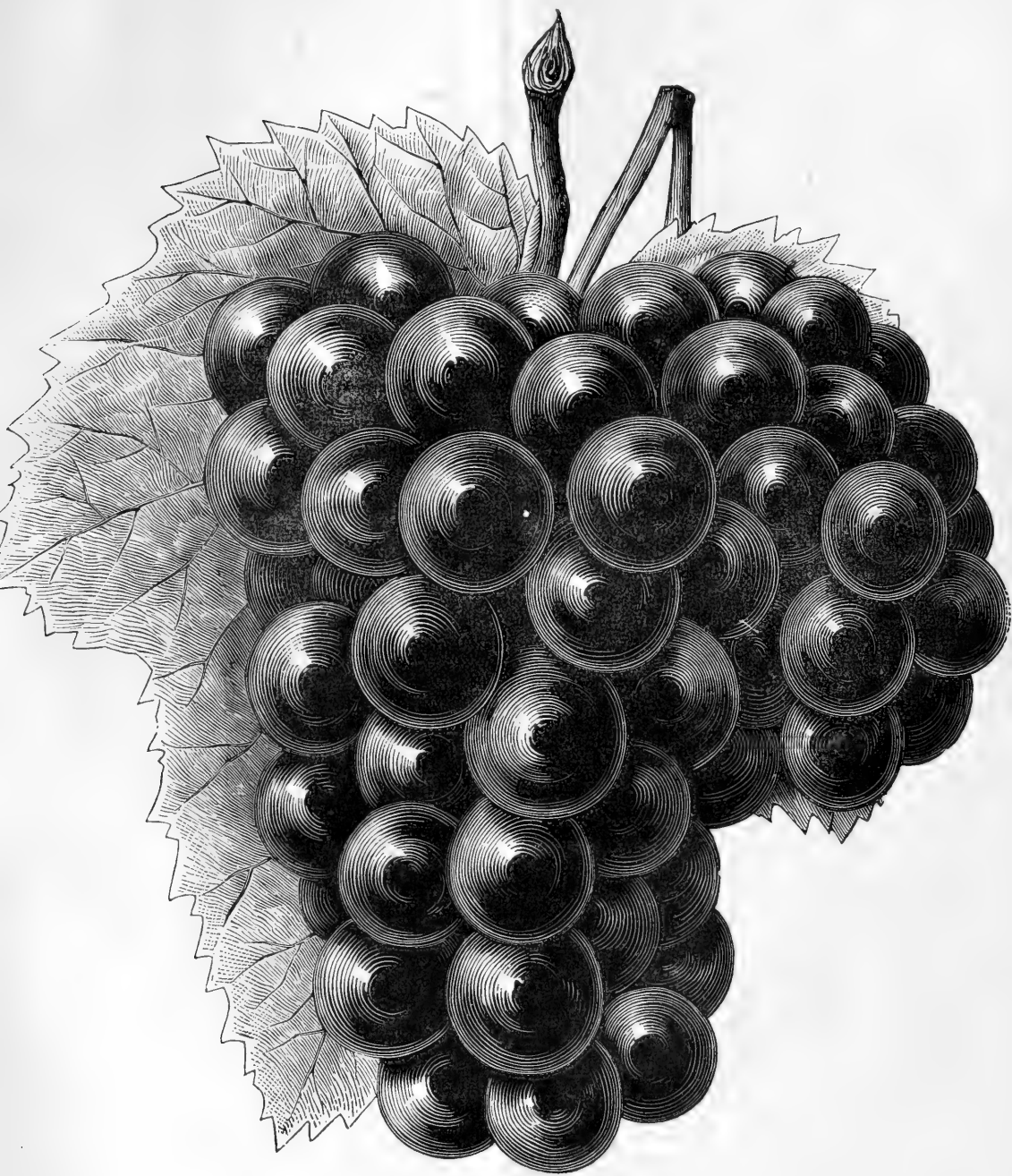
ROGERS' HYBRID NO. 8.

this one variety, and is highly satisfied with the result.

Shaker. See Union Village.

Taylor, or Bullit (often called Taylor's Bullit) (*Cord.*) Introduced to notice by Judge Taylor, of Jericho, Henry county, Kentucky. It is generally considered very unproductive. It seems that the vines of this variety require age, and spur pruning on old wood to make it produce well. Mr. Husmann says:

*No. 1. Goethe. No. 14. Gaertner. No. 41. Essex.
No. 3. Massasoit. No. 15. Agawam. No. 43. Barry.
No. 4. Wilder. No. 19. Merrimac. No. 44. Herbert.
No. 9. Lindley. No. 28. Requa. No. 53. Salem.



THE SALEM GRAPE.

"Give the vine plenty of room and plenty to do, i. e., prune it long and we think it will bear satisfactory crops when four years old."

Mr. Samuel Miller suggests to us to plant the Clinton among our Taylor to fertilize them. We have tried it and shall report the result. The *bunches* are small, but compact and sometimes shouldered; *berry* small, white to pale amber, round, sweet and without pulp. Skin translucent, very thin, but tough. *Vine* a very strong, rampant grower, healthy and very hardy. Its wine is of great body and fine flavor, more closely resembling the celebrated Riesling of the Rhine than perhaps any other of our American varieties.

Telegraph. A seedling from the Summer Grape (*V.estivalis*). Mr. Sam. Miller, of Bluffton, says it is one of the most promising of all the new EARLY grapes. "Telegraph" and "Christine" were usually recorded as synonymous. But this seems to be a mistake, and our Telegraph is much superior to the Christine. *Bunch* medium, very compact, shouldered; *berry* medium, oval, black, with blue bloom; flesh juicy, with very little pulp, spicy and of good quality; ripens as early as Hartford Prolific. A constant and reliable bearer. *Vine* a healthy, vigorous grower, in rich soil.

To-Kalon (Synonyms: the *Wyman* and the Carter grape). Originated at Lansingburg, and was at first supposed to be identical with the Catawba. C. Downing showed that it was entirely distinct and at first highly recommended it for general cultivation, but soon afterwards found that it drops its fruit and mildews very badly, and so stated; admitting, however, that "this grape is very fine, when you can get it." *Bunch* medium to large, shouldered, compact; *berries* varying in form from round to oval, nearly black in color and profusely covered with bloom; flesh sweet, buttery and luscious, without foxiness in its aroma or any toughness in its pulp. An early but a shy bearer.

Underhill's Seedling (*Labr.*) A comparatively new seedling, at first pronounced as "of no more value than many other fox grapes" by Mr. Fuller, but now considered by such good authority as G. W. Campbell to be "of more value than the Iona for general cultivation." With us here, however, this praise will not say much. *Bunch* medium to large, moderately compact; *berries* full medium, round, of catawba color; pulp tender, sweet, rich and vinous; slightly foxy; ripens early, about with the Concord. *Vine* a strong grower, hardy, healthy and productive. Not yet tested here.

Una. A new white seedling, raised by Mr. E. W. Bull, the originator of the Concord. Not yet disseminated.

Union Village (Synonyms: Shaker, Ontario) (*Labr.*) Originated among the Shakers at Union Village, Ohio. One of the largest of the native grapes we have, and one of the strongest growing vines. It is said to be a seedling of the Isabella,

scarcely better in quality, but the bunches and berries are of the size of the Black Hamburgs. *Bunches* large, compact, shouldered; *berries* very large, black, oblong; skin thin, covered with bloom; flesh quite sweet, when fully ripe, and of tolerably good quality; ripens late. *Vine* a coarse grower, but tender, requires protection in severe winters; often unhealthy.

Venango, or Miner's Seedling (*Labr.*) *Bunch* medium, compact; *berries* above medium, round, often flattened by their compactness, color pale red with a fine white bloom; skin thick; flesh sweet, but pulpy and foxy. *Vine* very healthy, hardy and productive.

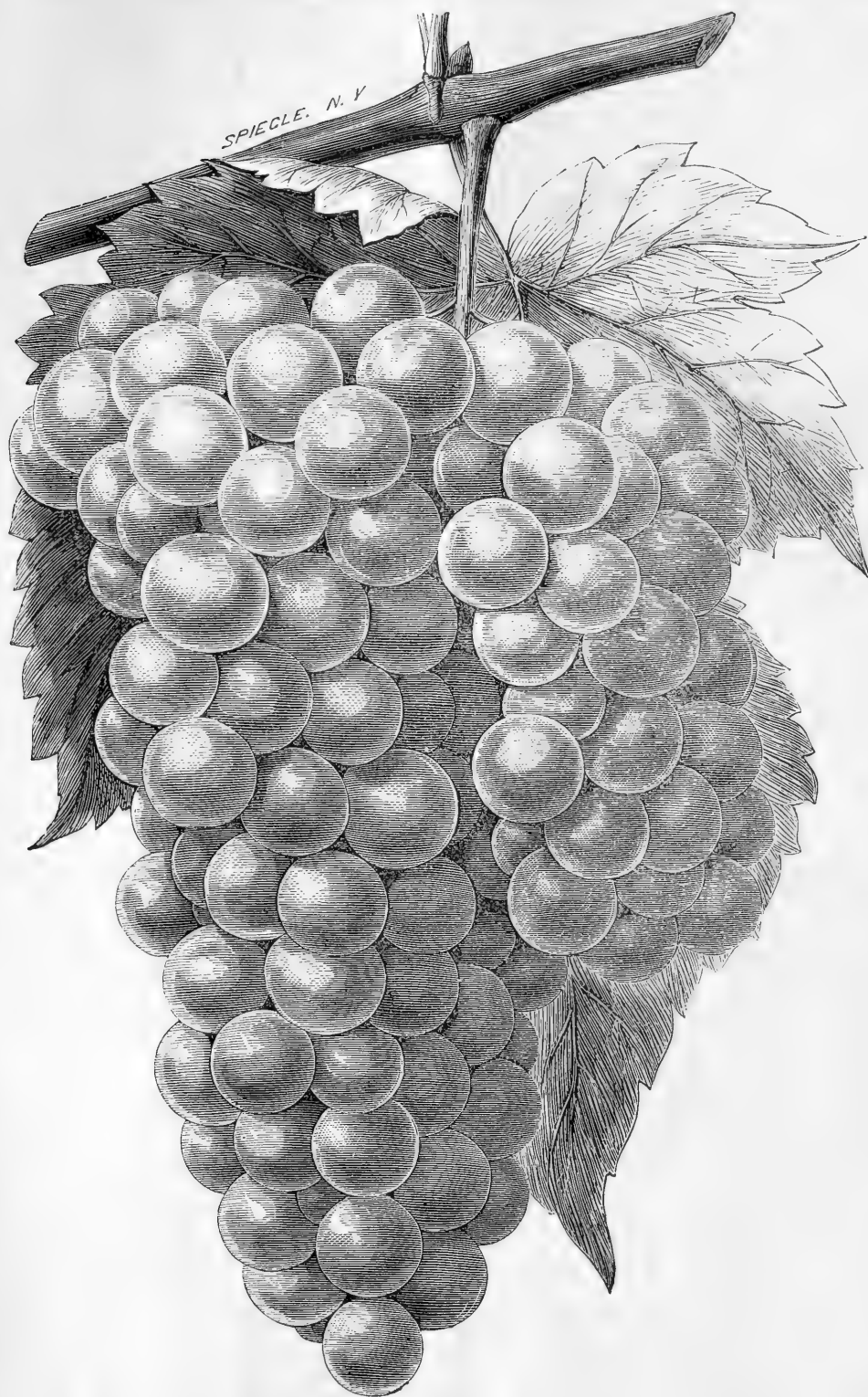
Walter. A new grape, raised by that enthusiastic horticulturist, Mr. A. J. Caywood, of Poughkeepsie, N. Y., crossing the *Delaware* with *Diana*. From the many premiums awarded to this grape, from the favorable reports by all who have seen or tested it for wine, it may well claim to be a first-class grape, and to merit a trial wherever American grapes are successfully grown. For the present it labors yet under the disadvantage of having been well tested in one locality only, and of being represented as the climax of perfection, or, at least, as being superior to all other American varieties, by its originator. In justice to the latter, however, it must be admitted that he honestly believes all he claims for his seedling, and has distributed the same with a liberality and a disinterestedness scarcely ever equaled by any originator of a new variety. It is now growing in almost every soil and location of this Union, and its true merits for general cultivation will soon be better ascertained than those of many older varieties. In general appearance, the characters of both the *Diana* and *Delaware* are said to be discernible. The *bunch* and *berry* are of medium size, of light Catawba color. Flesh tender, rich and sweet, ripening very early. *Vine* said to be a strong grower, with dark brown, short-jointed wood; large, tough leaves (green on the upper and lower surface, not wooly); free from mildew, hardy, healthy and very prolific. This trying season, it dropped its foliage same as its parent, the *Delaware*. Must 99°; acid 9.3-10.

Weehawken. A white grape raised by Dr. Chas. Siedhof, of North Hoboken, N. J., from the seed of a grape from the Crimea—*V. Vinifera*.

Numerous fruitless attempts have been made to procure a seedling of the European grape that will endure our climate. As far as Dr. S.'s immediate locality is concerned, he has been successful. It remains to be seen what will be its behavior in other localities.

—*Am. Horticult. Annual*, 1868.

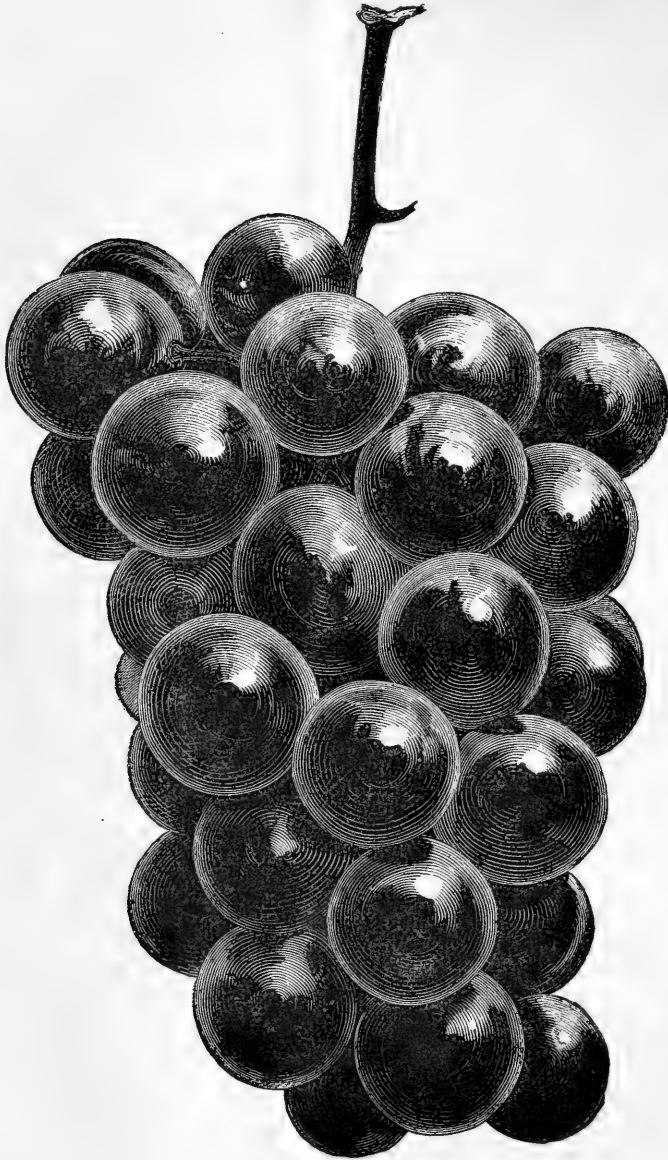
With us, at Bushberg, it does well, so far. Its foliage is very handsome, and decidedly foreign in character.



THE WALTER GRAPE.

Wilder. (Rogers' Hybrid No. 4.) This promises to be one of the most profitable and popular varieties for the market in cultivation, its size and beauty being equaled by its vigor, hardiness and productiveness. (The cut does not do justice to this most beautiful variety, which in appearance resembles the Black Hamburg.)

Bunch large, often shouldered, sometimes weighing a pound; berry large, globular; color dark purple, nearly black. Flesh tolerably tender, with a slight pulp, pleasant and sweet. Ripens with and sometimes earlier than the Concord, keeping for a long time. The vine is vigorous, hardy, healthy and productive.



THE WILDER GRAPE.

SMALL FRUITS.

[From a Lecture by Dr. JOHN A. WARDER, of Cincinnati,
Delivered January 13, 1868.]

We now come to the consideration of the *small fruits*, which, however, may constitute a very large share of the food, comfort and luxury of a well-regulated family, either in the country or city, and which will contribute in no small degree to healthiness of the people, by substituting their grateful acids and sweets for the calomel, ipecac, tartar, soda and potash, freely drawn from the druggist's shelves, either for cure or production of disease, according as they are administered by the doctor, or by the cooks.

THE STRAWBERRY.

This comes first in the order of the season, and, indeed, it is the most universally welcomed and relished of them all. The cultivation of this fruit is so simple, and the returns so speedy and so grateful, that it should occupy a prominent place in every farmer's garden. This fruit will grow in almost any soil, but a good stiff loam, well stirred, is probably the best. The strawberry plants should be well-rooted runners, or off-shoots from an older plantation. They should be taken up carefully, so as to have good roots. If these have been formed in small flower-pots sunk near the parent bed, so much the better, as the fibers, being confined by the pot, will be less disturbed in transplanting; or the ball may be set entire.

Strawberries may be grown in hills, in rows, or in beds. The latter is the common method, and the beds are formed by planting two or more rows a foot or fifteen inches apart, setting the plants twelve inches one from another in the rows. In the beds, the runners are allowed to grow, and to increase the number of plants indefinitely, so that they are often injured by being crowded too closely together. When planted in hills, they are set eighteen inches apart; the space between them is kept perfectly clean, and the runners are cut as soon as they appear. This results in the greater growth of the original plant, which has an increased number of crowns from which the blossoms and fruit proceed in greater numbers. This method affords the producer the best possible results in the size and appearance of his fruit, but it is attended with more labor and expense than the bed system. Many cultivators prefer planting in

rows, when they set the strawberries about a foot apart, and place the rows two feet or more one from another, according as they expect to use plows or hoes in their culture. In the narrow rows, the runner may be cut off, and the fruit will be almost as fine as that grown in the hills; but in the wider rows, the runners are generally allowed to strike roots, and spread the row into a bed in the course of the first summer after planting.

Spring is the best time for setting out plants, though this may be done at any time during the growing season. The advantage of early planting is the longer period allowed for the stools to grow and become thoroughly established in the soil. The plants are set by the line, a hollow is opened with the trowel, in this the roots are spread out, then covered with mellow earth, and pressed firmly with the fist, or even with the heel. If watered at once, a little fresh earth should be thrown in to prevent the cracking; but great care must be taken to avoid placing the crown below the surface of the ground; in other words, the roots must be planted, and not the crown, from which the crowns arise.

Mulching with old rotten manure, applied after planting, will encourage the growth of the strawberries, and keep the soil moist. Winter mulching with clear straw, leaves, or other material, should be liberally applied after the ground has frozen, and be left to protect the buds during the winter, and to be removed from the crowns of the plants in the spring.

Being left between the rows, the straw will make a good summer mulch, and keep the fruit clean. In hill culture, saw dust and old tan bark have been recommended, and still another material—spent hops from the brewery—has been used with excellent effect.

Strawberries have a peculiarity in their blossoms, from which they have been classified as *Pistillates*, *Staminate* and *Hermaphrodites*. In the first class the stamens are so defective that the flowers need the fertilizing influence of other kinds which must be planted near them. These furnish many of our favorite varieties, especially those which are largely cultivated in beds. The next class embraces most of those sorts which produce the largest berries; their flowers are often so deficient in the pistils that a large per centage of them fail to set fruit. This is particularly the case when these varieties are grown

in beds and are allowed to multiply their runners. They are, however, quite productive when cultivated in hills, and they have formed branching crowns from which spring numerous trusses of flowers. Besides these two classes there is another, in which the two sexes are so evenly combined that almost every flower is followed by perfect fruit. A very few varieties of the strawberry, either cultivated or wild, belong to this group. These different classes will be indicated in the list by the letters P, S, and H.

Wilson's Albany. (H.) Originated with John Wilson, of Albany, N. Y. This superior variety has probably done more to the advancing of strawberry culture in this country than any other. The plants will often fail after producing a full crop, and the beds should be frequently renewed. It is one of the *most productive* varieties known; large, irregular, conical, dark crimson with golden yellow seed; and many like it for its acid flavor. It is hardy, fruit firm, bears transportation well, and will probably yield more quarts of berries than any other variety. It is "the berry for the million."

Agriculturist. (H.) Originated with Seth Boyden, Newark, N. J. It succeeds remarkably well on light sandy soils as well as on some that are heavy. It produces some fine, large berries, of middling quality and a great number of inferior berries. Shape conical, with long neck; color light reddish crimson; flesh deep red, sweet and good; but too soft. Plant a strong grower, hardy and moderately productive. It does not stand as high as some other varieties in Missouri.

Boyden No. 30. A new seedling of Seth Boyden, the originator of the Green Prolific. The highest recommendation that can be given to it is that it is *superior* to that well proved reliable sort. The fruit is said to be larger than that of any other American variety.

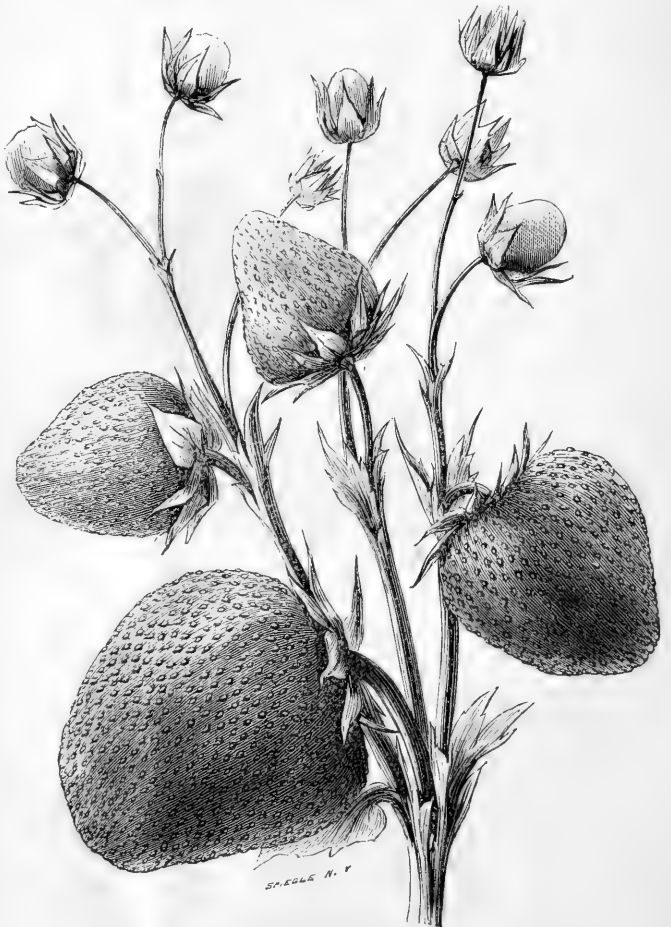
Charles Downing. (H.) A new seedling from Downer's Prolific, originated with J. S. Downer, of Elkton, Ky., and claimed by all who have fruited it to be superior to that well known, reliable sort. One of the most vigorous growing varieties that we have, and will, from present appearances, prove to be quite productive.

Downer's Prolific. (H.) Originated with Downer, of Kentucky, and succeeds well. Yields the bulk of its crop early, when fruit sells for high prices; a great bearer, and its

extreme hardiness makes it a very remunerative sort indeed; an excellent market variety, provided the market is near by. Size medium to large; globular, light scarlet; seeds deeply imbedded; flesh rather soft; acid and highly perfumed; hardy and very prolific.

Golden Queen. (H.) This new variety originated near Rochester, N. Y. Claimed by some to be identical with Trollope's Victoria, an old English variety long and well known in this country. Being such a fine yielder and such a large and beautiful fruit, besides ripening *very late* in the season, makes it one of the most valuable and desirable sorts. Berries very large, roundish conical, light pale scarlet; seeds slightly imbedded and set wide apart; flesh nearly white, juicy, but often insipid.

Green Prolific. (P.) Originated with Seth Boyden, N. J. One of the most valuable varieties on account of its extreme hardiness. Berries very large, round, pale crimson, or deep scarlet; seeds slightly sunken; rather soft, very acid, and of inferior flavor. Vigorous and productive.



AGRICULTURIST.

Ida. (P.) Originated with E. H. Cocklin, Shepherdstown, Pa. This variety is receiving universal praise by all who have fruited it. It yields fully equal to any other sort, and we do not hesitate to recommend it. *Berry* small, slightly conical; color *bright scarlet*; rather acid, but good. It is very strong and hardy, of rapid and certain growth, bears an immense crop, and in regular succession for three weeks.

Jucunda. (S.) A foreign variety, lately revived under the name of Knox's 700. *Berries* uniformly large and of a beautiful scarlet color; excellent flavor; a good grower, but rather tender; moderately productive wherever it succeeds.



IDA.



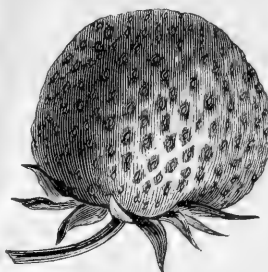
JUCUNDA.

Mexican Ever-Bearing. (H.) This strawberry is introduced to the public by Messrs. Whiting & Co., of Michigan, as obtained from a plant which came from the mountains in the State of Vera Cruz, Mexico. It is said to be very hardy, showing green

fruit stalks and leaves when the snow goes off in the spring; very prolific. The fruit of medium size and aromatic (?) flavor; flesh solid, bearing transportation very well; in form irregular conical, of bright scarlet color, and a *continuous* bearer.

According to the testimony of persons conversant with this fruit, it is a vigorous grower. It forms new crowns throughout the season, and bears continuously from early June until late in October. It is supposed by many persons, however, to be an *Alpine*, or very little different from that old well-known sort. We have just planted a few dozen of it, and cannot speak as yet knowingly ourselves.

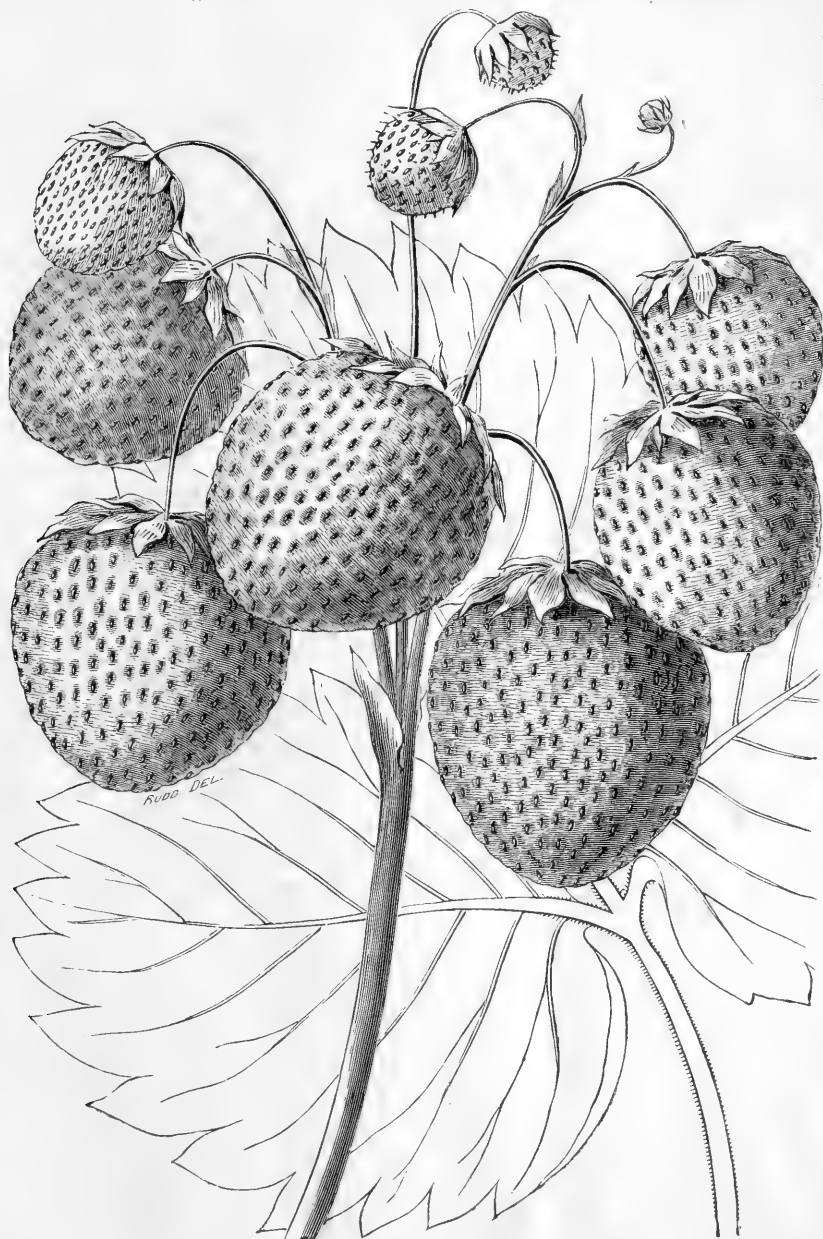
Napoleon III. (H.) This variety has succeeded very well, withstanding the intense heat as well as any we have. We consider it good for the amateur and family. *Berry* large, coxcomb-shaped, of a brilliant crimson; flesh white, firm, juicy, very sweet, and of a high flavor, delicious; ripens late.



weather. *Berry* medium, and of a beautiful deep scarlet red, glossy; flesh reddish, sweet and high flavored; and, in some localities, very good as a market berry.

President Wilder.

This new variety was produced in 1861 by Mr. Marshall P. Wilder, from artificial impregnation of Hovey's seedling, the favorite Massachusetts variety, with *La Constante*, one of the most beautiful foreign strawberries known. Messrs. Tilton & Co., publishers of the *Boston Journal of Horticulture*, have bought the entire stock of this new variety, and offer it as a premium to the subscribers of said journal for 1869 and 1870, to each of whom six plants are to be delivered next season. It has received the highest praise for perfection of form, flavor and brilliancy of color. The plant is said to be hardy, robust, vigorous, and very productive; the foliage well developed, dark green; the flowers perfect; the fruit large, some berries weighing more than an ounce each; their color brilliant crimson scarlet; the flesh rosy white, juicy, but sufficiently firm for market; flavor sprightly, with a distinct aroma of the *Alpine* strawberry; seed small; season late. We shall endeavor to propagate from it healthy plants for next spring delivery, at the lowest Eastern prices.



Russell's Prolific. (P.) This variety originated with H. Russell, Seneca Falls, N. Y. In many localities a very profitable sort, but should have every fourth to sixth row planted with some late staminate sort, on account of their being such late blossomers themselves, and requiring fertilizing. *Berry* large, round and somewhat irregular; color bright crimson, and a rich sub-acid flavor.

Romeyn's Seedling. (H.) There are perhaps none of the new varieties that attract as much attention as this. It is claimed to be equal to the *Triomphe de Gand* in every respect, and far more productive on all soils. *Berry* large, perfectly solid, and of very fine flavor, of a fine bright red color, and a very prolific bearer.

Triomphe de Gand. (H.) An excellent variety when grown in hills on a heavy soil, with rich cultivation, and has probably been more extensively cultivated and given better satisfaction than any other foreign variety ever introduced. *Berry* very large, irregular, conical, but often flattened, bright crimson; flesh firm, crisp, of rather mild flavor.

RASPBERRIES.

Next to the strawberry, and nearly allied to it in its botanical relations, is the raspberry, which furnishes a fruit of high flavor and exquisite fragrance. It is no wonder that this should be a favorite with all fruit growers, since it is easily produced, hardy, makes quick returns, is easily gathered, and commands a ready sale at high prices. And yet it is equally surprising that so few farmers' gardens are stocked with the raspberry.

Every soil that is cultivable will produce this fruit, but a good loam is best adapted to it. The only preparation requisite, is ordinary plowing of the land, but deep cultivation and manuring are well bestowed on the raspberry patch, and it should be kept clean by thorough summer cultivation.

The raspberry may be planted in the fall, but the early spring is generally preferred. They may be set about three feet apart in rows that are from six to nine feet wide, or planted in hills five by five feet, or wider for some of the larger sorts. Planting in rows is usually preferred.

Trimming the raspberry was formerly done only in the winter, and consisted in shortening the canes and removing the old dead wood and the surplus feeble shoots, so as to leave from two to four on each plant. Fall pruning, if done too early, may prove very injurious if followed by mild growing weather, that causes the buds to grow and thus destroys a portion of the next year's crop. Of course, it is understood that all the varieties and species of genus *rubus*, including the raspberry and blackberry, produce shoots one year that become the bearing canes of the next summer, and then die. An apparent exception exists in autumnal

bearing raspberries, which produce blossoms and fruits upon the shoots the season of their growth.

Summer pruning is now practiced by all good cultivators. This is a very simple operation, and consists in pinching off the shoots as soon as they are two feet high, which causes them to branch out with strong laterals, and these are to be cut back according to their strength in the winter. By this means the plants are made more stocky and bushy: they resemble little trees, and are able to bear enormous crops. At the same time all redundant branch shoots are to be cut away. This method also obviates the necessity for any kind of support, such as stakes or trellis, since the sturdy plants are able to stand alone.

We have two American species of eatable raspberries, the *strigosus* or red fruited, and the *occidentalis* or thimble berry—the black caps. Besides these the European species, the *idaeus*, furnishes many delicious raspberries, most of which are tender and need winter protection.



American Improved, or Doolittle's Black Cap. Found growing wild about 25 years ago, by Lauder Joslyn, of Ontario Co., N. Y. This variety is now extensively cultivated for market, and is valuable for its earliness and productiveness. Large, black, with slight bloom, sweet, juicy, of the same flavor as the common Black Cap, but its fruit is double the size, and it yields from four to six quarts to the bush. The extreme thorny character of the plant is its greatest fault.

Miami Black Cap. We received this variety from Mr. Geo. A. Miller, of Collinsville, Ill., where it is grown very extensively and preferred to all

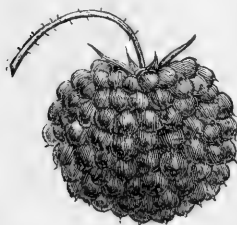
others. It is far superior to Doolittle's Black Cap; it ripens a few days later; keeps in bearing longer, and is less thorny. It is supposed by some good horticulturists that the "*Mammoth Cluster*" is the same as *this* Miami. Be this as it may, we can advise all to plant the "*Miami*," with the assurance that, with good cultivation, proper pruning and a favorable season, mammoth clusters will reward them.

Lum's Ever-Bearing. Another double bearing Black Cap raspberry; brought out by Mr. H. B. Lum, of Sandusky, O., and highly recommended by Dr. Warder and other reliable horticulturists in the vicinity where it originated. Not yet tried here before this season.



CLARKE.

Clarke. The best of the Antwerp family, originated by E. E. Clarke, New Haven, Conn. This comparatively new variety has already gained a high reputation, and is without doubt worthy of general culture. It has been well tested as to its power of resisting drouth; does well on light soil, but best on heavy ones. Fruit large, roundish conical, light crimson; grains medium, *very sweet, rich, and highly flavored*; parts freely from the core, moderately firm. Canes very strong and stocky, erect, and the leaves are so tough that they endure our hot summers without injury. Very productive, and so far as known, perfectly hardy.



Kirtland. Originated with J. P. Kirtland, Cleveland, O. One of the best of the native varieties, and quite hardy with us. Fruit medium, nearly round, bright red, pretty firm, large grain, sweet; sets abundantly and matures

Catawissa. This old, double bearing, purple cane sort is valuable only for the purpose of producing a late crop. If cut down early in spring it yields a large crop of dark purplish-red delicious fruit in the *fall*, until the ground freezes. The plant is quite tender, and must be protected in the winter in the Northern States.

Davison's Thornless, or Thornless Black Cap. Originated in the garden of Mrs. Mercy Davison, Gowanda, N. Y.; first introduced to the public in 1866. The thornless character of this plant is certainly a decided improvement, but it is also a less vigorous grower than the Doolittle or Miami. The fruit is of the same size and shape as the American Improved, but a week earlier.



PHILADELPHIA.

well. The earliest of the class, and thereby very profitable.

Philadelphia. Probably the most popular market variety, being very hardy and wonderfully productive. The fruit is of *inferior* quality; medium size, globular, dark red, moderately firm, sub-acid, not very juicy.

Riley. A *new* sort, originated with Mr. Riley, of Burlington Co., N. J. Said to be the earliest red raspberry, of good size; bright red color, fine flavor and very firm.

Prosser. Another *new* variety, originated with the late Benj. Prosser, of Burlington, N. J. The plant is said to be very vigorous and stocky, having somewhat the appearance of the Clarke, but has no thorns. (Some parties, when it was first introduced, called it Burlington.) There being some confusion as to this variety, we will state that we obtained our stock from Mr. J. H. Foster, Kirkwood, Camden Co., N. J., and it is, no doubt, the *genuine* Prosser. Fruit large, of fine attractive red color and excellent flavor; early and tolerably firm.

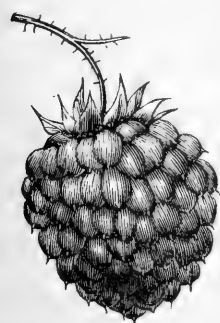


YELLOW CANADA.

Yellow Canada (Arnold No. 1.) Mr. Chas. Arnold, who has been so successful in hybridizing the grape, has already made some experiments in hybridizing the raspberry. His seedling No. 1 here figured, is a pale yellow variety of good quality, and apparently very prolific. It is probably the best hardy light yellow raspberry known, and should be had by every lover of this fruit.

Red Canada (Arnold's No. 2.) This is another of Mr. Arnold's new seedlings. Mr. Downing says of it:

"Your No. 2 ever-bearing raspberry is bearing finely with me this fall, and will no doubt excel all others. It is said to be, taking the season through, even more productive than the Philadelphia and much better in flavor."



sweet but sprightly flavor; canes short, stocky growth, with few spines. Very productive in some localities, but requires winter protection.

Antwerp Yellow. Of European origin (*R. Idæus*) and but little cultivated, as it is not so pro-

ductive or good as some others of similar color: rather more hardy than the red, but not sufficiently so to omit protecting. Fruit large, conical, pale yellow, sweet, but not high flavored. Canes strong, vigorous, light yellow; spines long, slender, and sometimes very numerous.

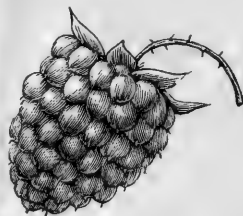
Franconia. Introduced from France about 25 years ago. One of the *old reliable* and *profitable* sorts. Fruit large, obtuse conical, dark crimson, firm; flavor sprightly and most delicious. Cane strong and branching; spines purple, stout and scattered; leaves large, deep green, rather flat when fully developed. A very valuable market variety. Requires also protection in winter, but has been found to endure severe freezing better than any of the Antwerp class of raspberries, except the Clarke and Kirtland.

Naomi. Sent out as a new variety from Ohio as promising to become "the leading raspberry, unequaled by any other variety!" But "after careful examination of the subject," Dr. Kirtland, of Cleveland, O., expresses the belief "that the true Naomi, as claimed by Messrs. Elliot, Hall and others, is no other than the old *Red Franconia*," and Mr. Elliott himself now admits "that the *Naomi* was so nearly identical with the *Franconia*, that it was impossible to distinguish them by wood, fruit or foliage. Still he did not regard them as the same!" Those who wish to buy the Naomi may send for it to Mr. Knox. We are satisfied with the *Franconia*.

Marvel of Four Seasons (*Merveille des Quatre Saisons*.) Originated in France. Produces a second crop in autumn, and is one of the best

autumn bearing varieties. Fruit medium, obtuse conical, crimson, soft, sweet and good; canes erect, rather slender; spines purple, short and quite numerous. Leaves flat, pale green underneath. Very hardy and produces a great number of suckers, the larger portion of which should be removed as soon as they appear, to insure a good crop of fruit.

Orange, or Brinckle's Orange. Originated with Dr. William Brinckle, of Philadelphia. One of the most delicious and attractive berries grown, and should be found in every garden. It is



requires protection in winter.

rather soft to carry a long distance to market, but for home use it is invaluable. Fruit large, obtuse conical, orange, sweet, rich and delicious flavor; canes strong, with small white spines. Plant vigorous and productive, but re-

BLACKBERRIES.

The blackberry, though abounding in most parts of the country, is entirely deserving of care and cultivation. In the garden it is under our control, and may be allowed to reach perfection by hanging until perfectly ripe. Any rich deep soil, well plowed, will suit this fruit. The plants should be allowed plenty of room, and may be set every four feet in rows eight or ten feet wide. The ground should be well cultivated, or deeply mulched, and the suckers must be kept down by cutting them with a hoe whenever they appear between the rows, and these should not be crowded—one stalk every two feet will be sufficient. This being only another species of the genus *rubus*, or *bramble*, the remarks as to the habit and pruning of the raspberry are applicable to this species, and need not be repeated, except that the summer pruning should be practiced a little higher, say from three to four feet, according to the vigor of the plants, and the redundant shoots must be cut off.

Lawton, or New Rochelle. This blackberry, found by Lewis A. Seacor, of New Rochelle, N. Y., has probably done more to make this class of fruits popular than any other variety; but the present depreciated value of the plants has taken away at least one half the incentive to good culture, and the result is seen in many a neglected plantation. Although it is still a valuable variety, yet it is not as good as we desire, for the fruit is too acid until fully ripe, at which time it is so very soft that it will not bear transportation. Fruit very large, irregular, roundish oval, black, very juicy, and moderately sweet when fully ripe. A strong and vigorous grower and very productive.

Kittatinny. This new wonder among the blackberries was found more than twenty years ago, growing wild in the woods near the Kittatinny mountains in New Jersey; but it was not dissemi-

nated until about three years ago, and is now considered, especially at the West, the most valuable variety. It is too vigorous a grower, so much so that it is very difficult to be kept within reasonable limits. Mr. Fuller truly remarked, "If my Kittatinny plants were to continue to grow at the same rate in years to come, I fear that my neighbors will procure a stock without purchasing them." The berries are not quite as large as the new Rochelle, but of far better quality, and probably the best flavored variety in cultivation; the berries are slightly conical, deep shining black, moderately firm, sweet and rich; ripens a few days earlier than the Lawton, and continues for about four weeks.

Missouri Mammoth. This is a new candidate for favor introduced by Thompson & Barter, of Linn, Mo. Claimed to be enormous in size and productiveness; very sweet as soon as black, with no core and perfectly hardy. They look promising in our grounds, but we are waiting to see the fruit before condemning or endorsing this variety.

Wilson's Early. Discovered by John Wilson, of Burlington, N. J. One of the most valuable varieties we have, but still it is not advisable for those who intend this fruit for market to confine themselves entirely to this variety, on account of its very limited period of ripening. Very large, oblong, oval, slightly pointed, black, quite firm, sweet, rich, and good; canes strong, roundish, and not deeply corrugated. The fruit ripens very early, and the entire crop matures in about two weeks.

White Cluster Blackberry. First discovered in Lycoming Co., Pennsylvania, where it produced a large, fine fruit of a light bright cream color, in large clusters; of fine flavor and sweet, ripening a little in advance of our common blackberry. A good grower and very hardy. Should our plants, which are from the original stock, prove to be here of equal good qualities, it would be the first light colored blackberry that proved worthy of cultivation.



KITTATINNY.

CURRANT.

In almost every log cabin garden we used to find this health giving fruit, which offers its agreeable acid in the heats of summer as an antidote or preventive of the bilious effects of our torrid season. And yet the currant is a sadly neglected fruit, and in many parts of the country there is not enough for home consumption.

This being a northern plant, it is thankful for a partial shade or protection from the scorching sunshine (in latitude forty or southward). For this object it is well to plant the bushes on the north side of a fence or building, and even in the shade of young orchard trees, where they sometimes succeed very well for a long period, even after the trees have occupied and shaded the whole surface. The currant delights in a deep rich loam, and will thrive even where the soil is somewhat moist. The bushes should not be crowded, as they require about four feet space, each way. Trimming is to be done in the fall or winter, as the buds swell very early in the spring. It should consist in shortening two or three of the strongest young shoots, cutting away all the weaker ones, and removing only the oldest and exhausted bearing wood. Unlike the raspberry, currants do not fruit on the young shoots, but upon little spurs that appear only on branches that are two or more years old.

The plantation must be kept clean, and free from grass and weeds. After cultivation in spring, it is a very good plan to cover the soil with a heavy coating of old hay, straw, fodder, leaves, or other suitable mulching material, which will retain the moisture, and preserve the fruit a long while in fine condition.

Cherry. The largest red currant in cultivation, and commands the highest price in market, often bringing double and treble the price of that obtained for other small varieties. Fruit very large and red, acid, not rich, only second-rate; *bunch* variable, from short to quite long, scarlet tapering. Plant a coarse grower, the young shoots being very strong and stocky; very productive, often produces two to three crops.

Versailles. Not quite so acid as the cherry, and the bunch more tapering; by some considered a better flavored variety. Fruit large, *bunch* long, and slightly tapering; dark red and acid.

Red Dutch. A well known reliable and productive sort, yielding immense crops of fruit yearly. A vigorous, erect grower. Fruit large, deep red; *bunches* long, tapering, rich, juicy, good.

White Grape. This is the best white currant we have, being large, of a beautiful yellowish white, transparent; *bunch* medium, slightly tapering; juicy, sweet, and rich; moderately vigorous, slender, of spreading habit; leaves medium size, sharply serrate, with a grayish green color; not shining; very productive.

White Dutch. Very similar to the foregoing.

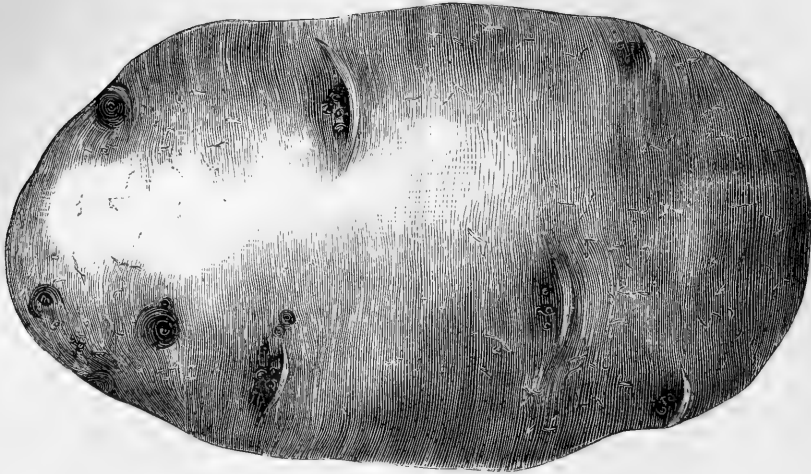
Black Naples. The only black currant worth cultivating. Fruit very large, black, sweet, but of musky flavor; clusters medium, tapering, loose; very vigorous grower, and productive after the plants have attained considerable age and size.

GOOSEBERRIES.

Fashion has wonderfully affected the production of this fruit. The fine, large English varieties were generally so badly affected with a mildew, that their culture was abandoned, except by a few fortunate persons. The introduction of the Houghton and American red varieties worked a revolution—everybody planted them, and everybody purchased them at high prices, for several years; when, lo! the cost of sugar caused a change, and the demand

fell off to such an extent, that the plantations were rooted up, and there was no longer any sale for the plants, and nurserymen discontinued their propagation. Gooseberries are just as valuable, nevertheless, to the farmer's family as ever they were, and their cultivation is so simple that they may and should be grown in every household and garden and by every cottage.

POTATOES FOR SEED.



EARLY ROSE.

CULTIVATION OF THE POTATO.

[From B. K. Bliss & Son's Descr. Catalogue.]

Almost all potato growers have their own peculiar ideas in regard to potato growing, and each is inclined to think his own way best. You may consult with almost any two farmers as to what they consider the best method of culture, and in a majority of cases you will find them to differ widely; both are well satisfied with their success, and we are led to think that the potato can be adapted to almost every variety of soil or culture. We have no desire to criticise or find fault with any of the various methods employed by different growers, but we have no hesitation in recommending the following as one that will insure success. A deep, thoroughly drained, light, sandy loam or peaty soil is most suitable for the potato. If the soil is new, other things being equal, so much the better; well-drained muck-soil, if matured by culture, is appropriate. The application of stable manure, unless thoroughly decomposed, is now generally considered to increase their liability to disease, to bring it on at an earlier period than would otherwise be the case, and also to produce large crops of imperfectly matured "*tubers*," which, if they escape the disease while in the ground, are more liable to be attacked after they are lifted than those grown on poorer soil. The ground selected,

therefore, should be in fair condition from having been moderately manured for some exhausting green crop in the previous season. But if the only land to be had is so poor as to render it necessary to apply manure in order to insure a fair crop, then use charred vegetable refuse, superphosphate of lime, or a very light dressing of well-decayed farm-yard manure. Plow deep, and subsoil. Many prefer fall plowing, in order that the ground may be thoroughly disintegrated by the action of frost. Plant as early as the ground can be found in fair working condition; let it be well leveled, harrowed and rolled. Cut the potatoes to single eyes, commencing toward the butt; hold the tuber in the left hand, and with a sharp knife cut as large a piece of the tuber with each eye as their number will admit, drawing your knife toward the center of the butt; and turn the tuber in your hand as if you were sharpening a pencil. By this method the tubers are more equally divided, and the eyes of uniform size. They should be allowed to dry two or three days after cutting. Should this not be convenient, let the sets be well rolled in plaster before planting, to absorb moisture. Plant in hills or drills, as you may prefer; mark out your ground as if for corn; if in hills, three feet apart each way; if in drills, they should be three feet apart and one foot in the drills. A single eye is sufficient in either case, though many prefer two eyes when planting in hills. By this method a great saving of seed is

effected, with equally satisfactory results. An acre of ground will require from one to one and a half barrels of seed, when cut and planted in this way. The sets should be covered about six inches, leaving the soil over them, if at all heavy, as open and loose as possible; if light, slightly press down the soil. Before planting, place in each hill a handful of the compost, prepared as follows: Take one cask of lime, and slake it with water, and then stir in one bushel of fine salt, and then mix in wood-ashes, so that it may not be too wet to handle. It will make about five barrels. When the tops are two or three inches above the ground, cultivate or hoe, drawing the soil carefully about them. In the case of early sorts which may be in danger of suffering from frost, the soil should be kept ridged up about the shoots as soon as they appear above the ground, keeping them nearly covered until four to six inches, and all danger of frost is past. Before earthing up, the ground should be well stirred between the rows with the cultivator, or, if in gardens, lightly forked so as to pulverize the soil. Keep the ground clear of weeds, if you wish for a good crop of potatoes. In digging, take advantage of the clear and dry weather—as soon as the tops are dead. Let them dry upon the barn-floor, and stow away in a cool, dry cellar.

[From the *American Agriculturist*.]

THE POTATO EXCITEMENT.

When we read the accounts of the enormous prices paid for tulip bulbs in the seventeenth century, we think that the stories must be much exaggerated, or the people of that time must have been very foolish. The present excitement in regard to new potatoes, in a measure rivals that of the tulips; at least we thought so, when we were told that \$50 each had been paid for a couple of tubers, that we were inspecting. The late Mr. Goodrich began his experiments with unimproved stock from South America, and the Early Rose and other new

sorts are derived from Mr. G.'s seedlings. Whoever produces a better potato than we already have is a public benefactor, and if he gives us one which will produce more to the acre, he adds largely to the wealth of the country.

Early Rose. This is a seedling of the Garnet Chili, that was originated in Vermont, in 1861, by Alfred Breese, Esq., an intelligent amateur cultivator. It has a stout, erect stalk, of medium height; large leaves, flowers freely; bears no balls. The tuber is quite smooth, nearly cylindrical, varying to flattish at the center, tapering gradually toward each end. Eyes shallow, but sharp and strongly marked. Skin thin, tough, of a dull bluish color. Flesh white, solid and brittle; rarely hollow; boils through quickly; is very mealy, and of the best table quality. It is as healthy and productive as the Early Goodrich, matures about two or three weeks earlier, and is greatly its superior for the table. The cut is a good outline of this beautiful and excellent sort.

Early Goodrich. A seedling of the Cuzco, raised in 1860 by the late Rev. C. E. Goodrich, of Utica, N. Y. Very early, large, roundish to long; skin white, nearly smooth; eyes large, *smooth*; flesh white, fine-grained, perfectly sound, solid to the core; keeps well, and is highly productive; a vigorous, healthy grower; yields on good soil, in favorable seasons, about 300 bushels per acre.

Harrison. Raised from the same seed ball as the Early Goodrich; rather late; large, oblong; skin very smooth and white; eyes small and full; flesh white, fine-grained, sound and healthy; always solid at the heart, of very good quality; keeps well, and is enormously productive. A very vigorous, healthy grower; yield, on good rich soil, with proper culture and favorable seasons, 400 bushels to the acre.

PRICE LIST

—OF—

GRAPE VINES,

SMALL FRUITS

—AND—

SEED POTATOES,

For FALL of **1869** and SPRING of **1870**.



Grown and for Sale by

ISIDOR BUSH & SON,

BUSHBERG, JEFFERSON CO., MO.

St. Louis Office, 315 Elm Street.

Our Vineyards and Grape Nurseries are located on the banks of the Mississippi, and can be reached by the Iron Mountain Railroad in one and a half hours from St. Louis. We have superior facilities for prompt forwarding by Railroads, Steamboats, Express, or Mail, and will deliver all packages, free of charge for freight or cartage, at St. Louis. We especially invite purchasers to visit our Vineyards and Propagating Grounds.

Our Stock embraces *all* the best and most approved sorts of Grapes for out-door cultivation; we desire to call special attention to our excellent NEW VARIETIES: the **MARTHA**, **CYNTHIANA**, **HERMAN**, **GOETHE**, **WILDER**, **SALEM**, and **ARNOLD'S NEW HYBRIDS**, also to our VERY LARGE and SUPERIOR STOCK OF

CONCORDS,

**IVES, DELAWARE, HERBEMONT, HARTFORD, NORTONS,
RULANDER, &c., &c.**

All our plants are warranted GENUINE, true to name, FIRST-CLASS Vines. Samples sent by mail on receipt of price at dozen rates.

AGENTS or DEALERS wishing to contract for large quantities, &c., should apply early for TRADE LISTS, Conditions, and Special Rates. CORRESPONDENCE SOLICITED.

NOTICE TO PURCHASERS.

We usually commence packing in the Fall about the 15th of October, and in the Spring by 15th of March. For the South we pack and ship during mild weather in Winter, but recommend Autumn shipment as preferable.

Please order early. Orders are filled in rotation, as nearly as possible; slight delays are therefore sometimes unavoidable. All orders, whether for single plants for the garden, or for thousands for the Vineyards, will receive prompt and careful attention.

Parties ordering are requested to write their orders distinctly, apart from the remainder of the letter, with name of P. O., County and State *on the Order*, and to state explicitly the mode of conveyance by which they desire their plants forwarded and how they wish packages and invoices directed. When no route is designated, we forward to the best of our judgment. We deliver goods free of cartage to the transportation lines in St. Louis, but from that point all Freight or Express charges are at the expense of the purchasers, and our responsibility ceases. In *no case* can we be held responsible for damage caused by carelessness or delay on the part of the *forwarders*; claims for losses by *detention* should be at once made on them.

Small packages of Vines (up to 4 lbs.) can be sent safely and most economically by *MAIL*—a privilege not half appreciated as yet.—Where plants are ordered by mail, please send cash with the order, adding 25 cents only for our expense of packing and postage.

The Vines and other articles on the following list will be furnished at the annexed prices, *only* when the quantity specified is taken, except as follows: 6 Vines of *one* variety will be furnished at the dozen rate; 50 or more at the 100 rate; 500 at the 1000 rate; but those rates do *not* apply when two or more varieties are included to make up the required number.

As a rule no varieties are substituted by us for those ordered without express permission; when any of the kinds ordered cannot be furnished, the money for same is returned.

Packing will be carefully done, in good style, for which a small charge will be made, sufficient only to cover the cost of material.

Terms: CASH with order, or from known parties, to points where there is an Express agent, by Express C. O. D. On orders to be shipped C. O. D. to parties unknown to us, a reasonable *advance* required.

Bank Drafts or Checks, P. O. orders and the Express, are safe means of remitting money. Currency by mail at senders risk, though we do not know of an instance where it failed to reach us.

The receipts of remittances are promptly acknowledged by us.

We wish to hear from every purchaser and every lot sent out; if satisfactory, for our mutual gratification and benefit, if there be errors, that we may promptly correct them; as it is our aim to give entire satisfaction.

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ISIDOR BUSH & SON,
BUSHBERG, MO.

GRAPE VINES.

Those designated by a * are deserving of general cultivation in our latitude; those marked † promise well and should be planted in *every* good collection. NEW and RARE varieties in *italics*.

The signs ○ ● or ● prefixed to each variety, denote the color: ○ for white or green; ● for red, amber, or brown; ● for black or blue grapes.

ONE YEAR OLD NO. 1 VINES.		Each.	Per Doz	Per 100.
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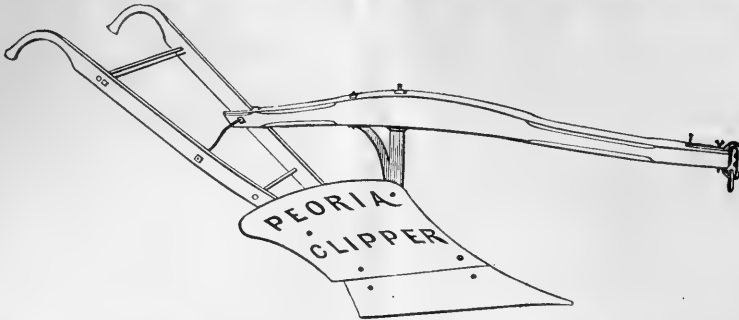
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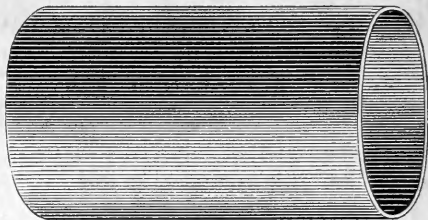
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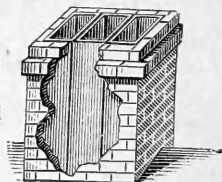
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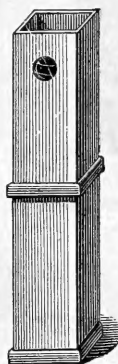
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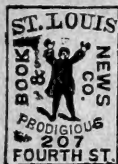
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